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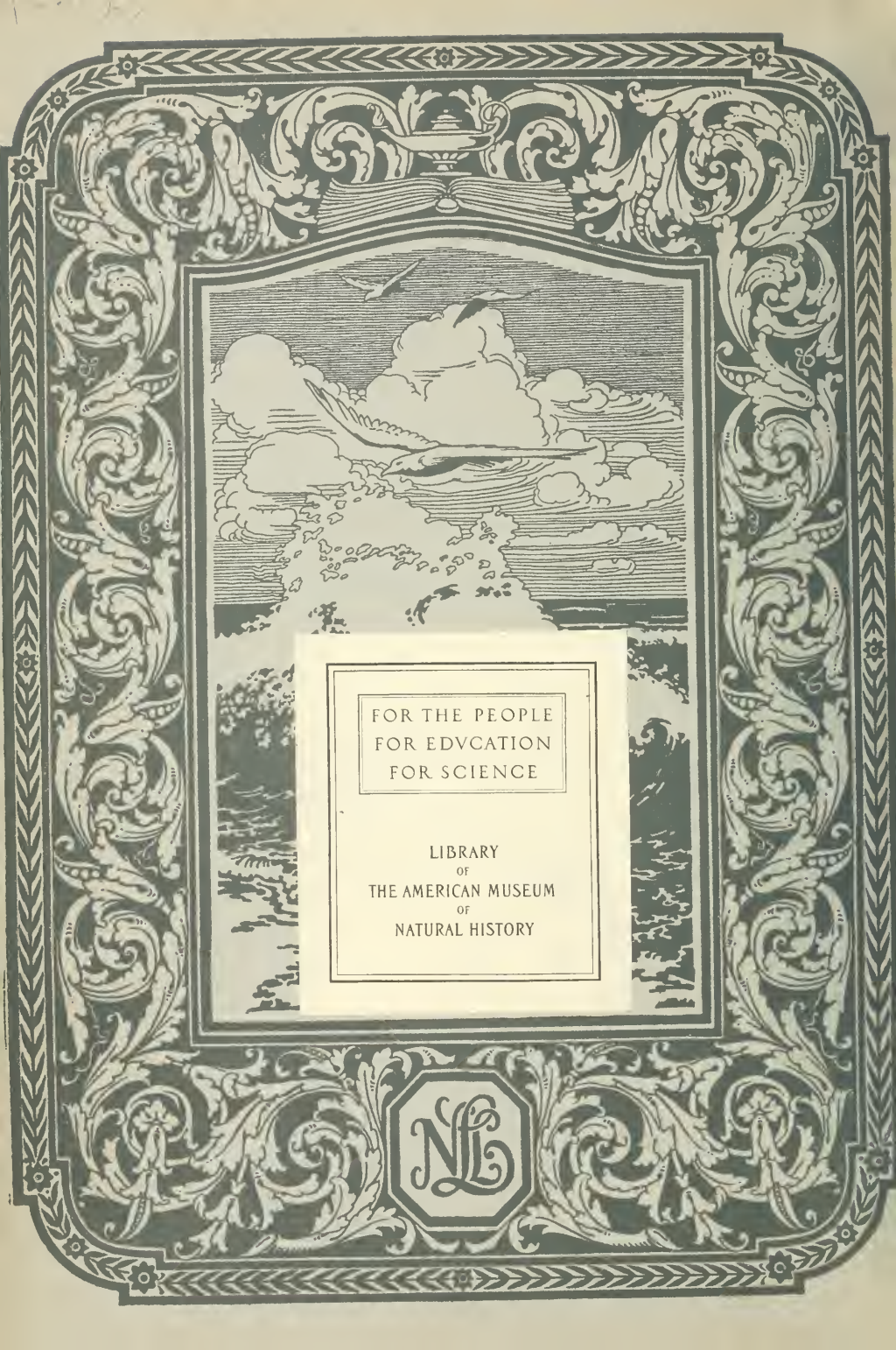
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PINE GROSBEAK *Pinicola enucleator leucura* (Muller)

ADULT MALE — IMMATURE MALE — FEMALE

PURPLE FINCH *Carpodacus purpureus purpureus* (Gmelin)

MALE — FEMALE OR IMMATURE MALE

All ⅔ nat. size

Birds of America

EDITOR-IN-CHIEF
T. Gilbert Pearson
President of the National Association of Audubon Societies

CONSULTING EDITOR
John Burroughs

CONTRIBUTING EDITORS
Edward H. Forbush
State Ornithologist, Massachusetts

Herbert K. Job
Economic Ornithologist

William L. Finley
Naturalist, Author, and Lecturer

L. Nelson Nichols
Member Linnæan Society

MANAGING EDITOR
George Gladden

ASSOCIATE EDITOR
J. Ellis Burdick
Associate Member of American Ornithologists' Union

ARTISTS
R. I. Brasher R. Bruce Horsfall Henry Thurston

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BIRD MIGRATION

By Wells W. Cooke

THE mystery of bird migration has proved a fascinating subject for speculation and study from earliest times. Long ago it was noticed that birds disappeared in fall and reappeared in spring, but, not knowing where they spent the intervening period, many fanciful theories were advanced to account for their disappearance, as hibernation in hollow trees or in the mud of streams or ponds. With later years, however, has come a fuller knowledge of migration, especially of the particular region in which each species passes the cold season, and more definite information in regard to the routes followed in the spring and fall journeys. But fuller knowledge has served to increase rather than to lessen interest in the subject. More persons to-day are watching birds and noting their times of arrival and departure than ever before.

A knowledge of the times of migration of birds is essential as a basis for intelligent study of their economic relations and is equally necessary in formulating proper legislation for bird protection — two subjects which form important parts of the work of the United States Biological Survey.

For more than 2,000 years the phenomena of bird migration have been noted; but while the extent and course of the routes traversed have of late become better known, no conclusive answer has been found to the question, Why do North American birds migrate? Two different and indeed diametrically opposite theories have been advanced to account for the beginnings of these migrations.

According to the more commonly accepted theory, ages ago the United States and Canada swarmed with non-migratory bird life, long before the Arctic ice fields advancing south during the glacial era rendered uninhabitable the northern half of the continent. The birds' love of home influenced them to remain near the nesting site until the approaching ice began for the first time to produce a winter — that is, a period of inclement weather which so reduced the food supply as to compel the birds to move or to starve. As the ice approached very gradually, now and then receding, these enforced retreats and absences — at first only a short distance and for a brief time — increased both in distance and in duration until migration became an integral part of the very being of the bird. In other words, the formation of the habit of migration took place at the same time that changing seasons in the year replaced the continuous semi-tropical conditions of the preglacial eras.

As the ice advanced southward the swing to the north in the spring migration was continually shortened and the fall retreat to a suitable winter home correspondingly lengthened, until during the height of the glacial period birds were for the most part confined to Middle and South America. But the habit of migration had been formed, and when the ice receded toward its present position the birds followed it northward and in time established their present long and diversified migration routes.

Those who thus argue that love of birthplace is the actuating impulse to spring migration call attention to the seeming impatience of the earliest migrants. Ducks and Geese push northward with the beginnings of open water so early, so far, and so fast that many are caught by late storms and wander disconsolately over frozen ponds and rivers, prefer-

ring to risk starvation rather than to retreat. The Purple Martins often arrive at their nesting boxes so prematurely that the cozy home becomes a tomb if a sleet storm sweeps their winged food from the air. The Bluebird's cheery warble we welcome as a harbinger of spring, often only to find later a lifeless body in some shed or outbuilding where the bird sought shelter rather than return to the sunny land so recently left.

As a matter of fact, however, only a small percentage of birds exhibit these pre-seasonal migration propensities. The great majority remain in the security of their winter homes until spring is so far advanced that the journey can be made easily and with comparatively slight danger; and they reach the nesting spot when a food supply is assured and all the conditions of weather and vegetation are favorable for beginning immediately the rearing of a family of young.

If, however, a longing for home is considered the main incentive to their northward flight, there arises the question as to why birds desert that home so promptly after the nesting season is over. Indeed, most birds start south as soon as the fledglings are able to shift for themselves. The Orchard Oriole, the Redstart, and the Yellow Warbler of central United States and the Nonpareil of the south all begin their southward journey early in July, long before the fall storms sound a warning of approaching winter and when their insect menu is particularly varied and abundant.

According to the opposite migration theory, the birds' real home is the Southland; all bird life tends by over-production to over-crowding; and, at the end of the glacial era, the birds, seeking in all directions for suitable breeding grounds with less keen competition than in their tropical winter home, gradually worked northward as the retreat of the ice made habitable vast reaches of virgin country. But the winter abiding place was still the home, and to this they returned as soon as the breeding season was over. Thus, in the case of the Orchard Oriole mentioned above, many individuals that arrive in southern Pennsylvania the first week in May leave by the middle of July, spending only $2\frac{1}{2}$ months out of the 12 at the nesting site.

Whichever theory is accepted, the beginnings of migration ages ago undoubtedly were intimately connected with periodic changes in the food supply. While North America possesses enormous summer supplies of bird food, the birds must return south for the winter or perish. The over-crowding which would necessarily ensue should they remain in the equatorial regions is prevented by the spring exodus northward. No such movement occurs toward the corresponding southern latitudes. South America has almost no migratory land birds, for bleak Patagonia and Tierra del Fuego offer no inducements to these dwellers of the limitless forests of the Amazon.

The conclusion is inevitable that the advantages of the United States and Canada as a summer home and the superb conditions of climate and food for the successful rearing of a nestful of voracious young far over-balance the hazards and disasters of the journey thither. For these periodical trips did not just happen in their present form; each migration route, however long and complex, is but the present stage in development of a flight that at first was short, easily accomplished, and comparatively free from danger. Each lengthening of the course was adopted permanently only after experience through many generations had proved its advantages.

It may safely be stated that the weather in the winter home has nothing to do with starting birds on the spring migration, except in the case of a few, like some of the Ducks and Geese, which press northward as fast as open water appears. There is no appreciable change in temperature to warn the hundred or more species of our birds which visit South America in winter that it is time to migrate. It must be a force from within, a physiological change warning them of the approach of the breeding season, that impels them to spread their wings for the long flight.

The habit of migration has been evolved through countless generations, and during this time the physical structure and habits of birds have been undergoing a process of evolution

Eggs of American Birds

PLATE No. 4

1. Cedar Waxwing
2. Red-eyed Vireo
3. White-eyed Vireo
4. Warbling Vireo
5. Phainopepla
6. Blue-headed Vireo
7. Bell's Vireo
8. Black and White Warbler
9. Prothonotary Warbler
10. Worm-eating Warbler
11. Blue-winged Warbler
12. Oranged-crowned Warbler
13. Parula Warbler
14. Magnolia Warbler
15. Yellow Warbler
16. Water-Thrush
17. Yellow-throated Warbler
18. Prairie Warbler
19. Maryland Yellow-throat
20. Oven-bird
21. Yellow-breasted Chat
22. Chestnut-sided Warbler
23. Hooded Warbler
24. Redstart
25. Pipit

From a Drawing by Henry Thurston

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EGGS OF AMERICAN BIRDS

(Plate Number Four)

in adaptation to the climate of the summer home. In spring and early summer climatic conditions are decidedly variable, and yet there must be some period that has on the average the best weather for the birds' arrival. In the course of ages there have been developed habits of migration, under the influence of which the bird so performs its migratory movements that on the average it arrives at the nesting site at the proper time.

The word "average" needs to be emphasized. It is the average weather at a given locality that determines the average time of the bird's arrival. In obedience to physiologic promptings the bird migrates at the usual average time and proceeds northward at the usual average speed unless prevented by adverse weather. Weather conditions are not the cause of the migration of birds; but the weather, by affecting the food supply, is the chief factor which determines the average date of arrival at the breeding grounds. After the bird, in response to physiological changes, has started to migrate, the weather it encounters en route influences that migration in a subordinate way, retarding or accelerating the advance by only a few days, and having usually only slight effect upon the date of arrival at the nesting site.

Local weather conditions on the day of arrival at any stated locality are minor factors in determining the appearance of a given species at that place and time. The major factors in the problem are the weather conditions far to the southward, where the night's flight began, and the relation which that place and time bear to the average position of the bird under normal weather conditions. Many, if not most, instances of arrivals of birds under adverse weather conditions are probably explainable by the supposition that the flight was begun under favorable auspices and that later the weather changed. Migration in spring usually occurs with a rising temperature and in autumn with a falling temperature. In each case the changing temperature seems to be a more potent factor than the absolute degree of cold.

The direction and force of the winds, except as they are occasionally intimately connected with sudden and extreme variations in temperature, seem to have only a slight influence on migration.

Some birds migrate by day, but most of them seek the cover of darkness. Day migrants include Ducks and Geese (which also migrate by night), Hawks, Swallows, the Nighthawk, and the Chimney Swift. The last two, combining business and pleasure, catch their morning or evening meal during a zigzag flight that tends in the desired direction. The daily advance of such migrants covers only a few miles, and when a large body of water is encountered they pass around rather than across it. The night migrants include all the great family of Warblers, the Thrushes, Flycatchers, Vireos, Orioles, Tanagers, shore birds, and most of the Sparrows. They usually begin their flight soon after dark and end it before dawn, and go farther before than after midnight.

Night migration probably results in more casualties from natural causes than would occur if the birds made the same journey by day; but, on the other hand, there is a decided gain in the matter of food supply. For instance, a bird feeds all day on the north shore of the Gulf of Mexico; if, then, it waited until the next morning to make its flight across the Gulf in the daytime it would arrive on the Mexican coast at nightfall and would have to wait until the following morning to appease its hunger. Thus there would be 36 consecutive hours without food, whereas by night migration the same journey can be performed with only a 12 hours' fast.

Migrating birds do not fly at their fastest. Their migration speed is usually from 30 to 40 miles an hour and rarely exceeds 50. Flights of a few hours at night, alternating with rests of one or more days, make the spring advance very slow, averaging for all species not more than 23 miles a day, but with great variations of daily rate among the different species. The exact number of miles which a particular bird makes during one day's journey has not yet been determined, and cannot be ascertained until the tagging or banding of birds by means of metal rings is carried out on a far more extensive scale than has yet been possible.

If migration were a steady movement northward with the same individuals always in the van, numerous careful observations might make it possible to approximate the truth; but instead of this, most migrations are performed somewhat after the manner of a game of leap-frog. The van in spring migration is composed chiefly of old birds, and as they reach their nesting places of the previous year they remain to breed. Thus the vanguard is constantly dropping out and the forward movement must depend upon the arrival of the next corps, which may be near at hand or far in the rear. Moreover, in our present state of knowledge we can not say whether a given group of birds after a night's migration keeps in the van on succeeding nights or rests and feeds for several days and allows other groups previously in the rear to assume the lead. It is known that birds do not as a rule move rapidly when migrating in the daytime, but from the meagre data available it may be inferred that the speed at night is considerably greater. During day migration the smaller land birds rarely fly faster than 20 miles an hour, though the larger birds, as Cranes, Geese, and Ducks move somewhat more rapidly. The result of timing Nighthawks on several occasions gave a rate of 10 to 14 miles an hour, the former being the more usual speed. This slow rate results from the irregularity of the flight, caused by the birds' capturing their evening and morning meals en route. In the evening the flight lasted about an hour and a half and in the morning about an hour. Thus a distance of approximately 30 miles would be traveled by each individual during the morning and evening flights.

Night migrants probably average longer distances in most of their flights, and this is known to be the case with some species. The Purple Martin, during the spring of 1884, performed almost its entire migration from New Orleans to Lake Winnipeg during only 12 nights — an average of 120 miles for each night of movement — and some late migrants, like the Gray-cheeked Thrush, must make still greater distances at a single flight. That most of them can fly several hundred miles without stopping is proved by the fact that they make flights of 500 to 700 miles across the Gulf of Mexico.

The length of the migration journey varies enormously. A few birds, like the Grouse, Quail, Cardinal, and Carolina Wren, are non-migratory. Many a Bobwhite rounds out its full period of existence without ever going 10 miles from the nest where it was hatched. Some other species migrate so short a distance that the movement is scarcely noticeable. Thus, Meadowlarks are found near New York City all the year, but probably the individuals nesting in that region pass a little farther south for the winter and their places are taken by migrants from farther north. Or part of a species may migrate and the rest remain stationary, as in the case of the Pine Warbler and the Black-headed Grosbeak, which do not venture in winter south of the breeding range. With them fall migration is only a withdrawal from the northern and a concentration in the southern part of the summer home — the Warbler in about a fourth and the Grosbeak in less than an eighth of the summer area. In the case of the Maryland Yellow-throat, the breeding birds of Florida are strictly non-migratory, while in spring and fall other Yellow-throats pass through Florida in their journeys between their winter home in Cuba and their summer home in New England.

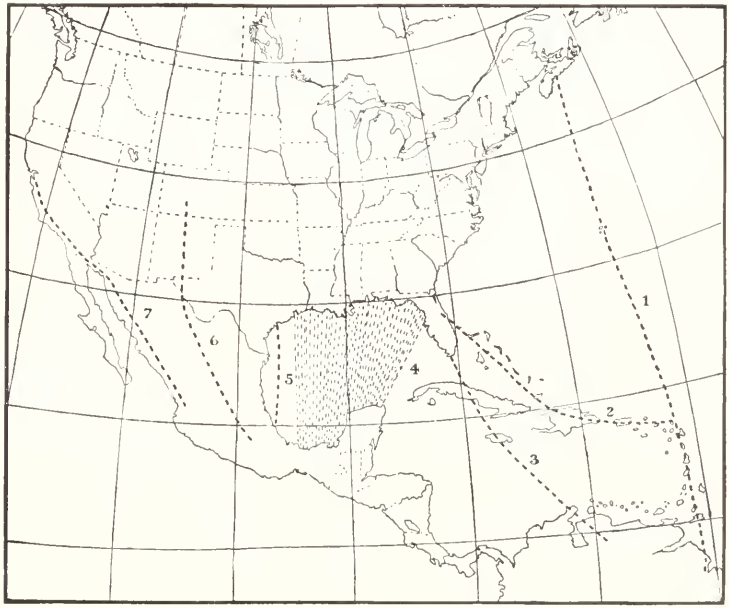
Another variation is illustrated by the Robin, which occurs in the middle districts of the United States throughout the year, in Canada only in summer, and along the Gulf of Mexico only in winter. Probably no individual Robin is a continuous resident in any section; but the Robin that nests, let us say, in southern Missouri, spends the winter near the Gulf, while his hardy Canada-bred cousin is the winter tenant of the abandoned summer home of the southern bird.

Most migratory birds desert the entire region occupied in summer for some other district adopted as a winter home. These two homes are separated by very variable distances. Many species from Canada winter in the United States, as the Tree Sparrow, Junco, and Snow Bunting; others nesting in northern United States winter in the Gulf States, as the Chipping, Field, Savannah, and Vesper Sparrows, while more than a hundred species leave the United States for the winter and spend that season in Central or even in South America.

Nor are they content with journeying to northern South America, but many cross the Equator and pass on to the pampas of Argentina and a few even to Patagonia. Among these long-distance migrants are some of our commonest birds; the Scarlet Tanager migrates from Canada to Peru; the Bobolinks that nest in New England probably winter in Brazil, as do Purple Martins, Cliff Sparrows, Barn Sparrows, Nighthawks, and some Thrushes, which are their companions both summer and winter. The Black-poll Warblers that nest in Alaska winter in northern South America, at least 5,000 miles from the summer home. The land bird with the longest migration route is probably the Nighthawk, which occurs north to Yukon and south 7,000 miles away, to Argentina.

But even these distances are surpassed by some of the water birds, and notably by some of the shorebirds, which as a group have the longest migration routes of any birds. Nineteen species of shorebirds breed north of the Arctic Circle, every one of which visits South America in winter, six of them penetrating to Patagonia, a migration route more than 8,000 miles in length. The world's migration champion, however, is the Arctic Tern.

The shape of the land areas in the northern half of the Western Hemisphere and the nature of the surface has tended to great variations in migratory movements. If the whole area from Brazil to Canada were a plain with the general characteristics of the middle section of the Mississippi Valley, the study of bird migration would lose much of its fascination. There would be a simple rhythmical swinging of the migration pendulum back and forth, spring and fall. But much of the earth's surface between Brazil and Canada is occupied by the Gulf of Mexico, the Caribbean Sea, and parts of the Atlantic Ocean, all devoid of



Courtesy of U. S. Dept. of Agriculture

PRINCIPAL MIGRATION ROUTES OF NORTH AMERICA

Most migrants use route No. 4, though this necessitates a flight of 500 to 700 miles across the Gulf of Mexico. A few traverse the more direct route No. 3, and still fewer, route No. 2. Only water birds make the 2,400-mile flight along route No. 1, from Nova Scotia to South America.

sustenance for land birds. The two areas of abundant food supply are North America and northern South America, separated by the comparatively small areas of Mexico and Central America, the islands of the West Indies, and the great waste stretches of water.

The different courses taken by the birds to get around or over this intervening inhospitable region are almost as numerous as the bird families that traverse them, and only some of the more important routes will be mentioned here.

Birds often seem eccentric in choice of route, and many do not take the shortest line. The 50 species from New England that winter in South America, instead of making the direct trip over the Atlantic involving a flight of 2,000 miles, take a somewhat longer route that follows the coast to Florida and passes thence by island or mainland to South America. What would at first sight seem to be a natural and convenient migratory highway extends from Florida through the Bahamas or Cuba to Haiti, Porto Rico, and the Lesser Antilles and thence to South America. Birds that travel by this route need never be out of sight of land; resting places are afforded at convenient intervals and the distance is but little longer than the water route. Yet beyond Cuba this highway is little used. About 25 species continue as far as Porto Rico and remain there through the winter. Only adventurers of some six species gain the South American mainland by completing the island chain. The reason is not far to seek — scarcity of food. The total area of all the West Indies east of Porto Rico is a little less than that of Rhode Island. Should a small proportion only of the feathered inhabitants of the eastern States select this route, not even the luxuriant fauna and flora of the tropics could supply their needs.

A still more direct route, but one requiring longer single flights, stretches from Florida to South America, via Cuba and Jamaica. The 150 miles between Florida and Cuba are crossed by tens of thousands of birds of some 60 different species. About half the species take the next flight of 90 miles to the Jamaican mountains. Here a 500-mile stretch of islandless ocean confronts them, and scarcely a third of their number leave the forest-clad hills for the unseen beyond. Chief among these is the Bobolink. With the Bobolink is an incongruous company of traveling companions — a Vireo, a Kingbird, and a Nighthawk that summer in Florida; the Chuck-will's-widow of the Gulf States; the two New England Cuckoos; the Gray-cheeked Thrush from Quebec; the Bank Swallow from Labrador; and the Black-poll Warbler from far-off Alaska.

The main-traveled highway is that which stretches from northwestern Florida across the Gulf, continuing the southwesterly direction which most of the birds of the Atlantic coast follow in journeying to Florida. A larger or smaller percentage of nearly all the species bound for South America take this roundabout course, quite regardless of the several-hundred-mile flight over the Gulf of Mexico.

The birds east of the Allegheny Mountains move southwest in the fall, approximately parallel with the seacoast, and apparently keep this same direction across the Gulf to eastern Mexico. The birds of the central Mississippi Valley go southward to and over the Gulf. The birds between the Missouri and the edge of the plains and those of Canada east of the Rocky Mountains move southeastward and south until they join the others in their passage of the Gulf. In other words, the great majority of North American birds bound for a winter's sojourn in Central or South America elect a short cut across the Gulf of Mexico in preference to a longer land journey by way of Florida or Texas. In fact, millions of birds cross the Gulf at its widest part, which necessitates a single flight of 500 to 700 miles. It might seem more natural for the birds to make a leisurely trip along the Florida coast, take a short flight to Cuba, and thence a still shorter one of less than 100 miles to Yucatan — a route only a little longer and involving much less exposure. Indeed, the earlier naturalists, finding the same species both in Florida and in Yucatan, took this probable route for granted, and for years it has been noted in ornithological literature as one of the principal migration highways of North American birds. As a fact, it is almost deserted except for a few Swallows, some shore birds, and an occasional land bird storm driven from its accustomed course, while over the

Eggs of American Birds

PLATE No. 5

1. Long-billed Marsh Wren
2. Chickadee
3. Bush-Tit
4. Brown-headed Nuthatch
5. House Wren
6. Sharp-tailed Sparrow
7. Bank Swallow
8. Golden-crowned Kinglet
9. Barn Swallow
10. Song Sparrow
11. Rose-breasted Grosbeak
12. Bluebird
13. Blue-gray Gnatcatcher
14. White-breasted Nuthatch
15. Wood Thrush
16. Abert's Towhee
17. Bendire's Thrasher
18. Olive-backed Thrush
19. Blue Grosbeak
20. Cardinal
21. Mockingbird
22. Catbird
23. Brown Thrasher
24. Robin
25. California Thrasher

From a Drawing by Henry Thurston

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EGGS OF AMERICAN BIRDS

(Plate Number Five)

Gulf route night after night for nearly eight months in the year myriads of hardy migrants wing their way through the darkness toward an unseen destination.

To the westward a short route stretches a few hundred miles from the coast of Texas to northern Vera Cruz. It is adopted by some Warblers, as the Kentucky, the Worm-eating, and the Golden-winged, and a few other species, which seek in this way to avoid a region scantily supplied with moist woodlands.

Still farther west are two routes which represent the land journeys of those birds from western United States that winter in Mexico and Central America. Their trips are comparatively short; most of the birds are content to stop when they reach the middle districts of Mexico and only a few pass east of the southern part of that country.

Still another route is one which extends in an approximately north and south line from Nova Scotia to the Lesser Antilles and the northern coast of South America. Though more than a thousand miles shorter than the main migration route, it is not employed by any land bird. But it is a favorite fall route for thousands of water birds, notable among which is the Golden Plover.

All Black-poll Warblers winter in South America. Those that are to nest in Alaska strike straight across the Caribbean Sea to Florida and northwestward to the Mississippi River. Then the direction changes and a course is laid almost due north to northern Minnesota in order to avoid the treeless plains of North Dakota. But when the forests of the Saskatchewan are reached the northwestward course is resumed and, with a slight verging toward the west, is held until the nesting region in the Alaskan spruces is attained.

Cliff Swallows in South America are winter neighbors of the Black-poll Warblers. But when in early spring nature prompts the Swallows which are to nest in Nova Scotia to seek that far-off land, situated exactly north of their winter abode, they begin their journey by a westward flight of several hundred miles to Panama. Thence they move leisurely along the western shore of the Caribbean Sea to Mexico, and, still avoiding any long trip over water, go completely around the western end of the Gulf. Hence as they cross Louisiana their course is directly opposite to that in which they started. A northeasterly flight from Louisiana to Maine and an easterly one to Nova Scotia completes their spring migration. This circuitous route has increased their flight more than 2,000 miles.

Why should the Swallow select a route so much more roundabout than that taken by the Warbler? The explanation is simple. The Warbler is a night migrant. Launching into the air soon after nightfall, it wings its way through the darkness toward some favorite lunch station, usually one to several hundred miles distant, and here it rests and feeds for several days before undertaking the next stage of its journey. Its migration consists of a series of long flights from one feeding place to the next, and naturally it takes the most direct course between stations, not avoiding any body of water that can be compassed in a single flight.

The Swallow, on the other hand, is a day migrant. It begins its spring migration several weeks earlier than the Warbler and catches each day's rations of flying insects during a few hours of slow evolutions, which at the same time accomplish the work of migration. Keeping along the insect-teeming shores, the 2,000 extra miles thereby added to the migration route are but a tithe of the distance the bird covers in pursuit of its daily food.

The normal migration route for the birds of eastern North America is a northeast and southwest course approximately parallel with the trend of the Atlantic coast; the birds breeding in the interior take a line of flight parallel in general with the course of the three great river valleys — those of the Mississippi, the Red, and the Mackenzie — that form a highway rich in food supplies between their winter and summer homes. Many birds, however, follow migration routes widely differing from the normal. One of the most extreme exceptions is that of the Marbled Godwit. Formerly a common breeder in North Dakota and Saskatchewan, some individuals on starting for their winter home in Central America took a course almost due east to the Maritime Provinces of Canada and thence followed

the Atlantic coast to Florida and continued southward; others went in the opposite direction, traveling westward to southern Alaska and southward along the Pacific coast to Guatemala. Thus birds which were neighbors in summer became separated nearly 3,000 miles during migration, to settle finally in close proximity for the winter.

The Connecticut Warbler, choosing another eccentric course, adopts different routes for its southward and northward journeys. All the individuals of this species winter in South America, and so far as known all go and come by the same direct route between Florida and South America across the West Indies; but north of Florida the spring and fall routes diverge. The spring route leads the birds up the Mississippi Valley to their summer home in southern Canada; but fall migration begins with a 1,000-mile trip almost due east to New England, whence the coast is followed southwest to Florida. The Connecticut Warbler is considered rare, but the multitudes that have struck Long Island lighthouses during October storms show that the species is at least more common than would be judged from spring observations, and also show how closely it follows the coast line during fall migration. The breeding of the Connecticut Warbler offers a fruitful field of investigation for some bird lover during a summer vacation, for there undoubtedly is a large and as yet undiscovered breeding area in Ontario north of Lakes Huron and Superior. Incidentally this route of the Connecticut Warbler is a conclusive argument against the theory that migration routes always indicate the original pioneer path by which the birds invaded the region of their present summer homes.

Another species having an elliptical migration route is the White-winged Scoter. This Duck breeds near fresh water in the interior of Canada and winters entirely on the ocean along the Atlantic and Pacific coasts of the United States. From its summer home west of Hudson Bay individuals that are to winter on the Atlantic travel 1,500 miles almost due east to the coast of the most eastern part of Labrador; thence they cross the Gulf of St. Lawrence and follow the New England coast to their winter home, which extends from southwestern Maine to Chesapeake Bay, with the center of abundance off Long Island and Massachusetts. In spring the birds return to their breeding grounds by an inland route traversing the valleys of the Connecticut, Hudson, and Ottawa rivers. Individuals that winter along the Pacific coast from Washington to southern California are known to pass by thousands up and down the coast as far north as that coast has a generally north and south trend; but as soon as the coast line turns westward near the northwestern part of British Columbia the birds disappear and are not known anywhere in the 500-mile strip between the Pacific coast and the Mackenzie Valley. Apparently this region is crossed at a single flight from the salt water of the coast to the fresh-water summer home on the great lakes of the Mackenzie Valley.

A migration route entirely different from any thus far mentioned is that of the Western Tanager, or Louisiana Tanager, as it was formerly called. From its winter home in Guatemala it enters the United States about April 20; another 10 days and the van is in central New Mexico, Arizona, and southern California, marking an approximately east and west line. The next 10 days the easternmost birds advance only to southern Colorado, while the western have reached northern Washington. May 10 finds the line of the van extending in a great curve from Vancouver Island northeast to central Alberta and thence southeast to northern Colorado. It is evident that the Alberta birds have not reached their breeding grounds by way of the eastern slope of the Rocky Mountains, a route which would naturally be taken for granted by anyone examining a map of the winter and summer homes. On the contrary, these Alberta breeders must have come by way of the Pacific coast to southern British Columbia and then crossed over the main range of the Rocky Mountains, which at this season (May 20) are still cold and partly covered with snow.

The shape of North America tends to a converging of the lines of migration toward the Gulf of Mexico, and consequently the east and west breadth of the migration route just south of the United States is usually less than the corresponding breadth of the breeding

William L. Finley and H. T. Bohlman photographing nest of Western Tanagers in top of fir tree, eighty feet from the ground

territory. The extent to which migration routes contract varies greatly with different species. The Redstart represents one extreme where the lines of migration are carried far eastward to include the Bahamas and the Antilles, while they also extend southward into Mexico. Thus the migrating hosts present a broad front with an east and west extension of 2,500 miles from Mexico to the Lesser Antilles.

The opposite extreme, a narrow migration route, appears in the case of the Rose-breasted Grosbeak. The breeding range extends from Nova Scotia to central Alberta, 2,500 miles, and the migration lines converge until the Grosbeaks leave the United States along 800 miles of the Gulf coast from western Florida to central Texas.

The case of the Bobolink is typical of many species nesting in North America and wintering entirely in South America. The summer home extends from Cape Breton Island to Saskatchewan, 2,300 miles, and the migration lines converge toward southeastern United States and then strike directly across the West Indies for South America. In this part of their journey the migration path contracts to an east and west breadth of about 800 miles, and a very large percentage of the birds restrict themselves to the eastern half of it. In South America the region occupied during the winter has about one-fifth the breadth and one-third the area of the breeding range.

The route of the Scarlet Tanager is an extreme example of narrowness of the path traveled twice a year between winter and summer homes. The breeding range extends 1,900 miles from New Brunswick to Saskatchewan. The migration range is contracted to 800 miles from Florida to Texas as the birds leave the United States. The migration lines continue to converge until in southern Central America the limits are not more than 100 miles apart.

The Black and White Warbler presents some interesting phases of migration. It winters in Central America, Mexico, the West Indies, and the peninsula of Florida. Ordinarily it would not be possible to distinguish the spring migrants in Florida from the wintering birds, and the advance of migration could not be noted until the migrants had passed north of the winter range, but records of Black and White Warblers striking lighthouses of southern Florida indicate the beginning of the birds' northward migration flight from Cuba. This occurs on the average on March 4, and the birds do not appear in southern Georgia beyond their winter range on the average until March 24. Thus a period of 20 days is taken for the van of migration to move 400 miles across Florida, an average rate of 20 miles per day. This rate is about the slowest of all North American birds and is only slightly increased throughout the whole spring migration up the Atlantic coast to Nova Scotia, where the birds arrive about May 20, having averaged less than 25 miles a day for the whole 77 days after leaving Cuba.

Migration along the western border of the range is fully as slow as along the Atlantic coast; on the average, the first arrive at Kerrville, Tex., March 9 and in northern North Dakota May 10, having traveled 1,300 miles in 60 days, or 22 miles a day. Thence the speed is more than doubled to the northwestern limit of the range in the Mackenzie Valley.

Incidentally it may be remarked that the Black and White Warbler is one of the very few migrants which arrive in Texas and Florida before they appear at the mouth of the Mississippi. The van of most species reaches southern Louisiana earlier than southern Texas.

The Cliff Swallow is another species with a slow migration schedule. It must start northward very early, since by March 10 it is already 2,500 miles from the winter home and yet averages only 25 miles a day for the next 20 days while rounding the western end of the Gulf of Mexico. It more than doubles this rate while passing up the Mississippi and Ohio River valleys. The crossing of the Allegheny Mountains comes next, and there are only 200 miles of progress to show for the 10 days' flight. By this time spring has really come east of the Alleghenies, and the Swallow travels 60 miles a day to its summer home in Nova Scotia. It is to be noted that the Swallow works up to high rates of speed only when it is traveling on the diagonal, and that except during the ten days spent in crossing the mountains each 10 days' travel covers approximately 5 degrees of latitude.

One of the best examples of rapid migration is that of the Gray-cheeked Thrush. This bird remains in its South American winter home so long that it does not appear in southern United States until late April—April 25 near the mouth of the Mississippi and April 30 in northern Florida. The last week in May finds the bird in extreme northwestern Alaska, the 4,000 mile trip from Louisiana to Alaska having been performed in about 30 days, or about 130 miles a day.

Generally the later in the season a bird migrates the greater is its average speed, but not necessarily the distance covered in a single night. The early migrants encounter much bad weather, and after one night's migration usually delay several days before making the next flight. The later migrant finds few nights too unfavorable for advancing, so that short flights taken on successive nights greatly raise the average migration speed.

How do migrating birds find their way? They do not journey haphazard, for the familiar inhabitants of our dooryard Marten boxes will return next year to these same boxes, though meanwhile thay have visited Brazil. If the entire distance were made overland, it might be supposed that sight and memory were the only faculties exercised. But for those birds that cross the Gulf of Mexico, something more than sight is necessary. Among day migrants sight probably is the principal guide, but it is noticeable that these seldom make the long single flights so common with night migrants.

Sight undoubtedly does play a part in guiding the night journeys also. On clear nights, especially when the moon shines brightly, migrating birds fly high and the ear can scarcely distinguish their faint twitterings; if clouds overspread the heavens, the flocks pass nearer the earth and their notes are much more audible, and on very dark nights the flutter of vibrant wings may be heard but a few feet overhead. Nevertheless, something besides sight guides these travelers in the upper air. In Alaska a few years ago members of the Biological Survey on the Harriman expedition went by steamer from the island of Unalaska to Bogoslof Island, a distance of about 60 miles. A dense fog shut out every object beyond a hundred yards. When the steamer was halfway across, flocks of Murres, returning to Bogoslof after long quests for food, began to break through the fog-wall astern, fly parallel with the vessel, and disappear in the mists ahead. By chart and compass the ship was heading straight for the island, but its course was no more exact than that taken by the birds. The power which carried them unerringly home over the ocean wastes, whatever its nature, may be called a sense of direction. We recognize in ourselves the possession of some such sense, though imperfect and frequently at fault. Doubtless a similar but vastly more acute sense enables the Murres, flying from home and circling wide over the water, to keep in mind the direction of their nests and return to them without the aid of sight.

But even the birds' sense of direction is not infallible. Reports from lighthouses in southern Florida show that birds leave Cuba on cloudy nights, when they can not possibly see the Florida shores, and safely reach their destination, provided no change occurs in the weather. But at fickle equinoctial time many flocks starting out under auspicious skies find themselves suddenly caught by a tempest. Buffeted by the wind and their sense of direction lost, these birds fall easy victims to the lure of the lighthouse. Many are killed by the impact, but many more settle on the framework or foundation until the storm ceases or the coming of daylight allows them to recover their bearings.

A favorite theory of many American ornithologists is that coast lines, mountain chains, and especially the courses of the larger rivers and their tributaries form well-marked highways along which birds return to previous nesting sites. According to this theory, a bird breeding in northern Indiana would in its fall migration pass down the nearest little rivulet or creek to the Wabash River, thence to the Ohio, and reaching the Mississippi would follow its course to the Gulf of Mexico, and would use the same route reversed for the return trip in the spring. The fact is that each county in the Central States contains nesting birds which at the beginning of the fall migration scatter toward half the points of the compass; indeed, it would be safe to say all the points of the compass, as some young

Herons preface their regular journey south with a little pleasure trip to the unexplored north. In fall most of the migrant land birds breeding in New England move southwest in a line approximately parallel with the Allegheny Mountains, but we can not argue from this fact that the route is selected so that mountains will serve as a guide, because at this very time thousands of birds reared in Indiana, Illinois, and to the northwestward are crossing these mountains at right angles to visit South Carolina and Georgia. This is shown specifically in the case of the Palm Warblers. They winter in the Gulf States from Louisiana eastward and throughout the greater Antilles to Porto Rico; they nest in Canada from the Mackenzie Valley to Newfoundland. To migrate according to the "lay of the land," the Louisiana Palm Warblers should follow up the broad open highway of the Mississippi River to its source and go thence to their breeding grounds, while the Warblers of the Antilles should use the Allegheny Mountains as a guide. As a matter of fact, the Louisiana birds nest in Labrador and those from the Antilles cut diagonally across the United States to summer in central Canada. These two routes of Palm Warblers cross each other in Georgia at approximately right angles. It is possible to trace the routes of the Palm Warblers because those nesting to the east of Hudson Bay differ enough in color from those nesting farther west to be readily distinguished even in their winter dress. It must always be remembered, however, that from a common ancestry these two groups of Palm Warblers came to differ in appearance because they gradually evolved differences in breeding grounds and in migration routes and not that they chose different routes because they were subspecifically different.

The truth seems to be that birds pay little attention to natural physical highways except when large bodies of water force them to deviate from the desired course. Food is the principal factor in determining migration routes, and in general the course between summer and winter homes is as straight as the birds can find and still have an abundance of food at each stopping place.

It is interesting to note the relation between migration and molting. Most birds care for their young until old enough to look out for themselves, then molt, and when the new feathers are grown start on their southward journey in their new suits of clothes. But the birds that nest beyond the Arctic Circle have too short a summer to permit such leisurely movements. They begin their migration as soon as possible after the young are out of the nest and molt en route. Indeed, these Arctic breeders are so pressed for time that many of them do their courting during the period of spring migration and arrive at the breeding grounds already paired and ready for nest building, while many a Robin and Bluebird in the middle Mississippi Valley has been in the neighborhood of the nesting site a full month before it carries the first straw of construction.

Migration is a season full of peril for myriads of winged travelers, especially for those that cross large bodies of water. Some of the water birds making long voyages can rest on the waves if overtaken by storms, but for the luckless Warbler or Sparrow whose feathers become water-soaked an ocean grave is inevitable. Nor are such accidents infrequent. A few years ago on Lake Michigan a storm during spring migration forced to the waves numerous victims, as evidenced by many subsequently drifting ashore. If such mortality could occur on a lake less than 100 miles wide, how much more likely even a greater disaster attending a flight across the Gulf of Mexico. Such a catastrophe was once witnessed from the deck of a vessel 30 miles off the mouth of the Mississippi River. Large numbers of migrating birds, mostly Warblers, had accomplished nine-tenths of their long flight and were nearing land, when caught by a "norther," with which most of them were unable to contend, and falling into the Gulf they were drowned by hundreds.

During migration birds are peculiarly liable to destruction by striking high objects. The Washington Monument, at the National Capital, has witnessed the death of many little migrants; on a single morning in the spring of 1902 nearly 150 lifeless bodies were strewn around its base.

Every spring the lights of the lighthouses along the coast lure to destruction myriads of birds en route from their winter homes in the south to their summer nesting places in the north. Every fall a still greater death toll is exacted when the return journey is made. Lighthouses are scattered every few miles along the more than 3,000 miles of coast line, but two lighthouses, Fowey Rocks and Sombrero Key, cause far more bird tragedies than any others. The reason is twofold — their geographic position and the character of their lights. Both lights are situated at the southern end of Florida, where countless thousands of birds pass each year to and from Cuba; and both are lights of the first magnitude on towers 100–140 feet high. Fowey Rocks has a fixed white light, the deadliest of all. A flashing light frightens birds away and a red light is avoided by them as would be a danger signal, but a steady white light looming out of the mist or darkness seems like a magnet drawing the wanderers to destruction. Coming from any direction they veer around to the leeward side and then flying against the wind strike the glass, or more often exhaust themselves like moths fluttering in and out of the bewildering rays.

During the spring migration of 1903 two experienced ornithologists spent the entire season on the coast of northwestern Florida, visiting every sort of bird haunt. They were eminently successful in the long list of species identified, but their enumeration is still more remarkable for what it does not contain. About 25 species of the smaller land birds of the Eastern States were not seen, including a dozen common species. Among these latter were the Chat, the Redstart, and the Indigo Bunting, three species abundant throughout the whole region to the northward. The explanation of their absence from the list seems to be that these birds, on crossing the Gulf of Mexico, flew far inland before alighting and thus passed over the observers. This would seem to disprove the popular belief that birds under ordinary circumstances find the ocean flight excessively wearisome, and that after laboring with tired pinions across the seemingly endless wastes they sink exhausted on reaching terra firma. The truth seems to be that, endowed by nature with wonderful powers of aërial locomotion, many birds under normal conditions not only cross the Gulf of Mexico at its widest point but even pass without pause over the low swampy coastal plain to the higher territory beyond

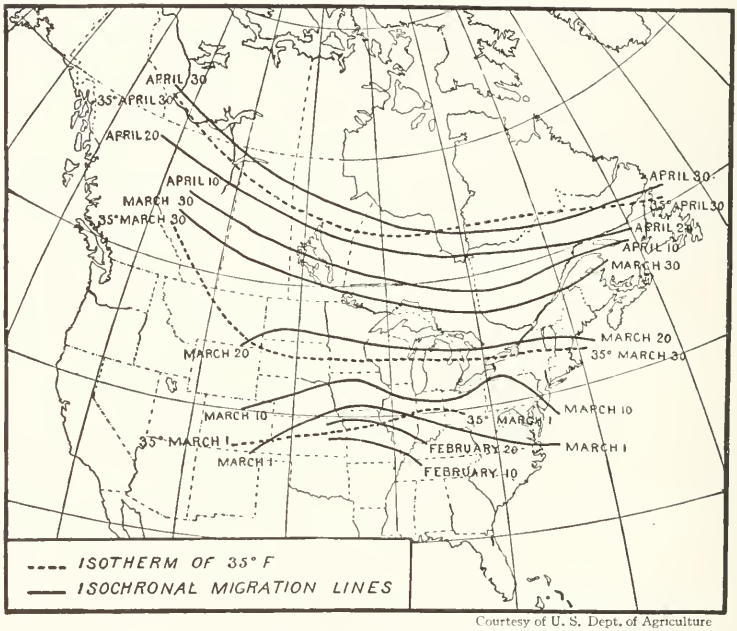
So little averse are birds to an ocean flight that many fly from eastern Texas to the Gulf coast of southern Mexico, though this 400 miles of water journey hardly shortens the distance of travel by an hour's flight. Thus birds avoid the hot, treeless plains and scant provender of southern Texas by a direct flight from the moist insect-teeming forests of northern Texas to a similar country in southern Mexico.

It may be well to consider the actual amount of energy expended by birds in their migratory flights. Both the soaring and the sailing of birds show that they are proficient in the use of several factors in the art of flying that have not yet been mastered either in principle or practice by the most skillful of modern aviators. A Vulture or a Crane, after a few preliminary wing beats, sets its wings and mounts in wide sweeping circles to a great height, overcoming gravity with no exertion apparent to human vision even when assisted by the most powerful telescopes. The Carolina Rail, or Sora, has small, short wings apparently ill adapted to protracted flight, and ordinarily when forced to fly does so reluctantly and alights as soon as possible. It flies with such awkwardness and apparently becomes so quickly exhausted that at least one writer has been led to infer that most of its migration must be made on foot; the facts are, however, that the Carolina Rail has one of the longest migration routes of the whole Rail family and easily crosses the wide reaches of the Caribbean Sea. The Hummingbird, smallest of all birds, crosses the Gulf of Mexico, flying over 500 miles in a single night. As already noted, the Golden Plover flies from Nova Scotia to South America, and in fair weather makes the whole distance of 2,400 miles without a stop, probably requiring nearly if not quite 48 hours for the trip.

Here is an aërial machine that is far more economical of fuel — *i. e.*, of energy — than the best aëroplane yet invented. The to-and-fro motion of the bird's wing appears to be an

uneconomical way of applying power, since all the force required to bring the wing forward for the beginning of the stroke is not only wasted, but more than wasted, as it largely increases the air friction and retards the speed. On the other hand, the screw propeller of the aëroplane has no lost motion. Yet less than 2 ounces of fuel in the shape of body fat suffice to force the bird at a high rate of speed over that 2,400-mile course. A thousand-pound aëroplane, if as economical of fuel, would consume in a 20-mile flight not the gallon of gasoline required by the best machines but only a single pint.

The Canada Goose is typical of what may be called regular migration. This bird fulfills the popular notion of bird migration, *i. e.*, it moves northward in spring as soon as



Courtesy of U. S. Dept. of Agriculture

MIGRATION OF THE CANADA GOOSE

An example of migration keeping pace with the advance of spring

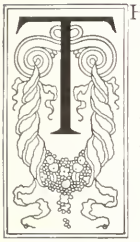
the loosening of winter's fetters offers open water and a possibility of food. It continues its progress at the same rate as spring, appearing at its most northern breeding grounds at the earliest possible moment. The isotherm of 35° F. seems to be the governing factor in the rate of spring migration of the Canada Goose and the isotherm and the vanguard of the Geese are close traveling companions throughout the entire route. Moreover, the isochronal lines representing the position of the van at various times are approximately east-and-west lines during the whole migration period. But this so-called regular migration is performed by a very small percentage of species, the great majority choosing exactly the opposite course — to remain in their winter homes until spring is far advanced and then reach their breeding grounds by a migration much more rapid than the northward advance of the season.

Much has been learned about bird migration in these latter days, but much yet remains to be learned.

ORDER OF PERCHING BIRDS—Concluded

FINCHES

Order *Passeres;* suborder *Oscines;* family *Fringillidæ*



THE Finches are the largest family of birds; there are about twelve hundred species and subspecies scattered over the world except in Australia; about two hundred are represented in the United States. They belong to the larger division of singing birds. All have cone-shaped bills, nine feathers in the hand section of the wing, and a sharp angle at the back of each foot. The line of opening of the bill turns downward near the base, and in some of the Finches the cutting edge of the lower bill is distinctly elevated about the center, this raised portion forming a tooth. At the corners of the mouth are bristles, sometimes indistinct but usually quite easily seen. There are always twelve feathers in the tail, but the shape varies. The nostrils are high up, bare in some species and in others covered with bristles.

The plumage varies from almost plain to highly variegated. The coloring of the Sparrows is adapted to their grassy, dusty habitats and the males and females are similar; while in the subdivision of Finches the males are chiefly bright-colored and the females either duller or with a distinct plumage. Nests are generally placed on the ground or in bushes or in low trees.

These birds are essentially seed-eaters, their strong bills being peculiarly adapted to this kind of food. They do, of course, eat insects also. Because of this indifference to animal food the Finches are less migratory than most birds.

Year by year the usefulness of this family is more and more appreciated by humans. They lay the farmer under a heavy debt of gratitude by their food habits, since their chosen fare consists largely of the seeds of weeds. Some idea of the money value of this group of birds to the country may be gained from the statement that the total value of the farm products in the United States in 1910 reached the sum of $8,026,000,000. If we estimate that the total consumption of weed seed by the combined members of this family resulted in a saving of only one per cent of the crops — not a violent assumption — the sum saved to farmers by these birds in 1910 was $80,260,000.

Their work begins before the seeds are ripe and continues throughout fall and winter and even far into spring. The Sparrows that breed on the farm have to content themselves early in the spring with seeds left from the preceding year. During August the seed-eating of Sparrows is sufficiently noticeable to attract the attention of even a casual observer; for by this time great stores of weed seed have ripened and the young Sparrows, which have been exclusively insectivorous, are ready to take vegetable food. From autumn to spring evidence of the seed-eating habits of Sparrows is so plain that he who runs may read; the lively flocks diving here and there among the brown weeds to feed are familiar adjuncts of every roadside, fence row, and field. A person visiting one of the weed patches in the agricultural region of the upper Mississippi valley on a sunny morning in January, when the thermometer is 20 or more below zero, will be struck by the life and animation of the busy little inhabitants. Instead of sitting forlorn and half frozen, they may be seen flitting from branch to branch, twittering and fluttering, and showing every evidence of enjoyment and perfect comfort. If one of them is shot, it will be found in excellent condition — in fact, a veritable ball of fat.

The most serious charge that can be brought against members of the Finch family is that they distribute noxious plants, the seeds of which pass through their stomachs and germinate when voided from the body. However, it seems likely that this agency of seeding down farms to weeds is infinitesimal when compared with the dispersion of weeds caused

by the use of manure containing weed seed and the planting of impure seed, which often contains seeds of foreign weeds of the worst stamp. Birds take seeds for food and it seems probable that such use would preclude the evacuation of any but a most insignificant proportion of uninjured seeds.

Four vernacular names have been applied to this group: Buntings, Grosbeaks, Sparrows, and Finches. "Bunting" means plump, or dumpy, or rounded out, as a sail is filled with the wind, and its application to this family refers to the stocky little bodies of its members. "Grosbeak" has reference to their short, thick bills, but is not altogether appropriate as there are birds in other families with this characteristic. "Sparrow" literally means "flutterer" and has come to us from the Anglo-Saxon *spearwa*, through the mediæval English *sparwe*, *sparewe*, and *sparowe*. "Finch" is also of Anglo-Saxon origin, but its literal meaning has been lost. Robert Ridgway considers it the most appropriate of the popular names for this family in America; he says (manuscript) that in a strict sense the term "Sparrow" pertains to the species *Passer* only, represented in America only by the introduced House Sparrow, or so-called English Sparrow, and in this restricted sense we have no native American true Sparrows; on the other hand there are many true Finches in America.

EVENING GROSBEAK

Hesperiphona vespertina vespertina (*W. Cooper*)

A. O. U. Number 514 See Color Plate 79

Other Names.— Sugar Bird; American Hawfinch.

General Description.— Length, 8¼ inches. Males, yellowish and black; female, gray and black. Bill, heavy; legs, short; tail, short and slightly emarginate; wings, nearly twice the length of tail and pointed.

Color.— ADULT MALE: *Forehead and stripe over the eye, yellow; crown, black;* rest of head with neck and upper back, plain olive, lighter and more yellowish olive on throat, changing gradually to clear *lemon-yellow on shoulders and rump* and to lighter yellow on posterior under parts, the longer under tail-coverts sometimes partly white; *upper tail-coverts, tail, and wings black; inner wing quills, white* or pale grayish; bill, light olive-yellowish or pale yellowish green; iris, brown. ADULT FEMALE: Above, plain deep smoke-gray, the head darker, the rump paler; the hindneck tinged with yellowish olive-green; throat, abdomen, and under tail-coverts white; rest of under parts, light buffy-grayish usually tinged with yellow, especially on sides of chest; wings, dull black with innermost greater coverts largely dull white, inner wing quills largely light gray; the primaries edged with white and pale gray, all except the three outermost quills white at base, forming a distinct patch; upper tail-coverts black with large terminal spots of pale buffy-grayish and white; tail, black with inner webs of feathers broadly white at tips.

Nest and Eggs.— NEST: Usually placed in the top of a conifer from 15 to 50 feet up; sometimes in other trees; a saucer-shaped affair of small twigs, grass, rootlets, bark strips, lined with fine rootlets or horsehair. EGGS: 3 or 4, clear green blotched with pale brown.

Distribution.— Interior districts of North America east of Rocky Mountains; north (in winter) to the Saskatchewan; south, in winter, irregularly, to Kansas, Iowa, Illinois, Kentucky, Ohio, etc.; eastward, irregularly and in winter only, to Ontario, New York, and New England. Breeds in western Canada.

The Hawfinch of England has lived in a populous land and among a people appreciative of the beauty of a beautiful bird. The American relative of the Hawfinch, nesting far out in the less accessible foothills of Alberta and up in the Canadian Rockies, has failed to meet with the poetical disposition and the friendship that belong to the admirers of the Hawfinch. The Evening Grosbeak is in reality a stranger to civilization except in the newer West, and this newer West is a stranger to him. In the winter there may be seen in the northwestern States scattered flocks of these Grosbeaks strikingly marked in their yellow and black. When certain seeds are scarce they will drift on into the eastern States in the middle of winter, reaching New England and the Maritime Provinces. But these years are not often.

During the early months of 1916 the presence of these birds in the East excited an unusual interest. The first record of the Evening Grosbeak in New York city was during the 1911 migration. The ornithological magazines and daily papers had many letters on the observations made of the 1916 migration. Sara Chandler Eastman gave the following interesting and informing record

to *Bird-Lore*. "The first record of the Evening Grosbeak at Portland, Maine, was made early in February, when a large flock settled in a mountain-ash on private grounds in the western part of the city. Throughout the months of February and April flocks in varying numbers were observed in different sections of the city, and the birds remained until the eleventh of May, none being seen, so far as known, after that date." The birds were seen both in low pine trees and on the ground. She added that "the males were in beautiful plumage, and it was a rare treat to see them, one's pleasure being greatly enhanced by their fearlessness, as they would permit a close approach without taking flight." Their call is short and cheery, and has been called by Mrs. Bailey, "wild and free."

Down from western Canada through the mountains all the way to Mexico is a variety called the Western Evening Grosbeak (*Hesperiphona vespertina montana*). They breed in the cañons in Arizona and are found not uncommonly near water throughout the southwestern mountain country. In many of the towns of the Pacific northwest they are fairly common winter birds in the street maples and in the parks and woodsides. Mrs. Bailey writes interestingly of their protective coloration. "While watching the birds on Mt. Shasta one day, I was struck by the conspicuousness of one that flew across an open space. As it lit on a dead stub whose silvery branches were touched with yellow lichen, to my amazement it simply vanished."

L. Nelson Nichols.

On his winter visits, the Evening Grosbeak may be found feeding on the buds or seeds of trees. The maple, elder, box-elder, and ash, each give their quota to him. The fruit of the sumac also attracts him. But none of these is valued as highly by him as are the various frozen or dried fruits on vines and trees; of all food his

Drawing by R. I. Brasher

EVENING GROSBEAK (½ nat. size)

A beautiful bird of the North who displays misplaced confidence in "civilized" man

preference is for apple seeds taken from frozen apples. A Michigan bird student reports that several of these birds which he kept in captivity for nearly two years refused to eat any kind of grain except a few oats and that only when hard pressed. Insects of any kind that could be secured they absolutely refused to touch.

PINE GROSBEAK

Pinicola enucleator leucura (*Müller*)

A. O. U. Number 515 See Color Plate 70

Other Names.— American Pine Grosbeak; Canadian Pine Grosbeak; Canadian Grosbeak; Pine Bullfinch.

General Description.— Length, 9 inches. Male, pale red and gray; female, gray and yellowish. Bill, short, broad, and thick; wings, long and pointed; tail, long and emarginated; feet, small.

Color.— Adult Male: General color of head, neck, and under parts (except abdomen, flanks, anal region, and under tail-coverts), rather light poppy-red (in summer) or dull pinkish red (in winter), the feathers grayish beneath the surface, this exposed in places, especially on chest; nasal tufts and part of lores and eye region, dusky; abdomen and upper portion of sides and flanks, rather light dull ash-gray or smoke-gray; under tail-coverts, similar but in part darker, broadly margined with white; the space between the shoulders, dusky, broadly margined with red; shoulders, dark grayish, margined with paler gray; rump, superficially, red; upper tail-coverts, broadly margined with red; wings, dull slate-dusky, most of the feathers edged with light grayish and white (the edgings broader and decidedly white on the inner quills), the greater and middle coverts broadly tipped with white, forming two conspicuous bands, which are sometimes, especially the anterior one, tinged with red; tail, slate-dusky edged with grayish (sometimes tinged with red). Adult Female: General color, plain smoke-gray, the crown and rump and part of upper tail-coverts, bright yellow-

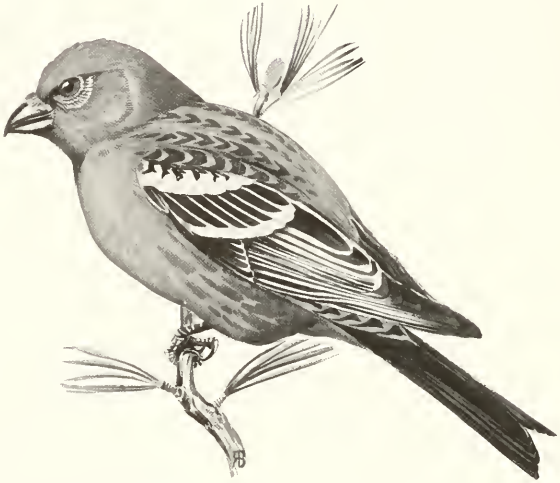
ish olive, tawny-olive, or russet, the back and anterior under parts, especially chest, sometimes tinged with the same; otherwise like adult males.

Nest and Eggs.— NEST: Usually in conifers; constructed with foundation and outside walls of twigs and rootlets enclosing a well woven "inner" nest of finer twigs, grasses, and bark strips. EGGS: 4, pale greenish-blue, spotted and blotched with dark umber-brown and lavender.

Distribution.— Northeastern North America, breeding from Cape Breton Island, southern Nova Scotia, New Brunswick, Maine, New Hampshire, Province of Quebec, etc., north to limit of coniferous forests; south in winter to southern New England, New York, northern New Jersey, Pennsylvania, northern parts of Ohio, Indiana, and Illinois, Iowa, etc., casually to District of Columbia, Kentucky, and Kansas; west to eastern Kansas, Minnesota, Manitoba, etc.

Some cold bright winter morning when first we step out into the frost, we hear a pleasing mellow whistle, and see several birds resembling Robins glide up into the apple tree or the clump of spruces in the front yard. Investigation reveals that there are about a dozen of them, moving about in rather a sedate and deliberate manner. Several are on the ground, the rest scattered about in the nearby trees, perhaps biting into frozen apples, or at work on the evergreen cones; in either case trying to get at the seeds encased within. Most of them are dark gray, but one or two look pinkish in the morning sunshine. A rather rare treat is ours, a visit from those nomads of the cold North, the Pine Grosbeaks.

The sight is of some significance. It may imply that the spruces in the northern forests are not bearing the normal crop of cones, and that this is one of the seasons, occurring only about once every half dozen years or so, when there will be a notable influx into the United States of Canadian winter birds. Probably the Crossbills and Redpolls will also be seen, with the accompanying flight of the fierce Goshawks, which prey upon them, also the Northern Shrike, and other northern birds. There is an added incentive now for winter outings, which will pay dividends in health and vigor through getting away from poorly ventilated indoors. Somehow there is a peculiar charm about these birds from the northern wilds which make no account of the fierce cold.



Drawing by R. I. Brasher

PINE GROSBEAK (¼ nat. size)

A bird that loves the great pine forests of Canada and the United States

During one such winter some friends of mine

discovered a Pine Grosbeak by a roadside unable to fly, owing to a slight injury to the wing, and took it home. The wing soon healed, and the bird, a young male, became very tame. Frequently it was released from the cage and would fly about the room, alighting on the persons of its benefactors to eat seeds, crumbs, or tender leaves such as lettuce. In spring it had a pretty warbled song. I saw it in late summer when it was molting and had lost most of its tail-feathers.

One year a flock of these interesting birds visited my garden daily from the middle of January to early March. They devoted themselves mostly to the maple seeds on the ground under those trees. I swept off the snow for them, and thus secured their daily return. It was most entertaining to watch them twirl the winged seeds in their bills and bite out the kernels. They are also partial to sumac, mountain ash, or other trees which bear and hold berries, and are not above eating some buds, of which surely there are enough.

In common with the Crossbills this species is said to breed very early, even when there i snow, but like them also it is probably irregular in this respect, as nests have been found in summer. HERBERT K. JOB.

In western North America are several varieties of the Pine Grosbeak. The Rocky Mountain Pine Grosbeak (*Pinicola enucleator montana*) lives in the Rocky Mountains from west central Alberta, Idaho, and Montana to northern New Mexico. The California Pine Grosbeak (*Pinicola enucleator californica*) breeds in the central Sierra Nevadas, in California. The Alaska Pine Grosbeak (*Pinicola enucleator alascensis*) breeds from northwestern Alaska and northwestern Mackenzie to northern Washington and winters south to eastern British Columbia and Montana. The Kodiak Pine Grosbeak (*Pinicola enucleator flammula*) is a bird of southern Alaska coming south in winter along the coast to British Columbia. The differences between these western forms and between them and the common Pine Grosbeak are trifling — a little larger or a little smaller in size, a shade darker or a shade lighter in coloration.

Photo by H. K. Job Courtesy of Outing Pub. Co.

PINE GROSBEAK

In Mr. Job's garden

The economic status of the Pine Grosbeaks is as nearly neutral as that of any bird could be They do no particular good beyond the possible distribution of seeds of valuable trees and, on the other hand, the few buds they eat from the evergreen and shade trees do not amount to much. Most of their food consists of buds from pine, spruce, and tamarack trees, the berries of the Virginia juniper and the mountain ash, and the seeds of the maples.

PURPLE FINCH

Carpodacus purpureus purpureus (*Gmelin*)

A. O. U. Number 517 See Color Plate 76

Other Names.— Purple Linnet; Purple Grosbeak; Red Linnet; Gray Linnet (immature and female).

General Description.— Length, 6¼ inches. Male, pinkish-purple and brown; female, olive-grayish above, and white below, conspicuously streaked above and below. Bill, shorter than head, conical, and thick; tail, about ¾ length of wing, deeply emarginate.

Color.— ADULT MALE: Crown, deep wine-purple (more crimson in summer); rump, paler, more pinkish wine-purple; back and shoulders, reddish-brown or wine-purplish, streaked with darker; wings and tail, dusky with light brownish-red or light brown edgings, the middle and greater coverts, broadly tipped with dull wine-purple or light brownish-red; eye and ear regions dusky brownish-red; rest of head, together with front and lateral under parts, pinkish wine-purple; abdomen, anal region, and under tail-coverts, white; flanks usually streaked with brown, and longer under tail-coverts rarely marked with narrow streaks of dusky. ADULT FEMALE: Above, olive or olive-grayish (more

olivaceous in winter), streaked with dusky and, to a less extent, with whitish; wings and tail, dusky with light olive or olive-grayish edgings; a broad stripe of olive on side of head, and a more broken stripe or patch of the same on sides of throat; ear and cheek regions, mostly whitish, streaked with olive; under parts, white (tinged with buff in winter) broadly streaked with olive, except on abdomen, anal region, and under tail-coverts, the streaks distinctly wedge-shaped or triangular.

Nest and Eggs.— NEST: Usually placed in conifers; a frail open-work structure of grass, rootlets, bark strips, vegetable fibers, thickly lined with hair; resembles a Chipping Sparrow's nest, but larger. EGGS: 4 to 6, dull greenish-blue spotted with shades of brown, black, and lilac.

Distribution.— Eastern North America; breeding from Pennsylvania (especially in mountains), northern New Jersey, Connecticut, southern Ontario, northern Illinois, Minnesota, and North Dakota, north to more eastern British provinces, Hudson Bay, Manitoba; in winter south to Gulf coast.

The haunts of the Purple Finch are the low green forests, not the denser portions, but rather the open woods and swamps where firs and cedars are numerous. He is one of the conspicuous birds of such a neighborhood. From the top of a balsam or a spruce he delivers his song — a rapid, easily flowing, melodious warble, resembling in a measure that of the Warbling Vireo but more variable in character. Sometimes when overcome with emotion he launches into the air with vibrating wings, rising upward and upward, melody pouring from his throat like a torrent down a mountain side, until he has reached an altitude of two or three hundred feet, when with outstretched wings he descends in wide circles to the summit of the very tree from which he started. Occasionally this impassioned outbreak comes with such suddenness as to startle anyone who may be nearby.

Courtesy of Am. Mus. Nat. Hist.

PURPLE FINCH (¾ nat. size)

From the top of a balsam or a spruce he delivers his song

Often he may be seen dancing about a female on the limbs of a tree or on the ground. His wings will be fully extended and quivering, his crest standing as high as possible, his tail spread, and the bright feathers of the rump raised in the air. During this performance he gives voice softly and sweetly to his melodious warble. Presently, apparently overcome by his emotion, he closes his wings and flies to a neighboring tree — but in a short time he repeats his antics.

In addition to his song, he has a sharp call-note, *pip*, uttered while flying, and another, *chip chee*, used when feeding. The immature males, which look like the females, sing almost as well as the full-plumaged males. Several observers have stated that the female sings, but not as sweetly as the male.

In western North America we find in the valleys the California Purple Finch (*Carpodacus purpureus californicus*) and on the mountain slopes Cassin's Purple Finch (*Carpodacus cassini*). The California Purple Finch is about the same size as the eastern bird, but the red is bright rosy instead of wine color. The Cassin's Finch is similar to the California but duller in coloration and he is larger by about an inch.

The scientific name given to this group of birds is very expressive of a bad habit indulged in by them. *Carpodacus* is from the Greek, and translated into English means "fruit-biting." When the trees are budding they do considerable harm in the peach and cherry orchards by eating the buds. Later they have been found feeding on green cherries. In the winter any seed-bearing tree will furnish them with a meal. Though they habitually feed in trees, they often destroy the seeds of noxious weeds. A bird of this species was watched with a glass while feeding in a thicket of giant ragwood. In three minutes he ate fifteen seeds.

HOUSE FINCH

Carpodacus mexicanus frontalis (*Say*)

A. O. U. Number 519

Other Names.— Crimson-fronted Finch; Red-headed Linnet; Linnet; Burion; Red-head.

General Description.— Length, 5½ inches. Upper parts, brownish-gray; under parts, white streaked with brown. Bill, shorter than head, conical, and thick; tail, about ¾ length of wing, nearly even.

Color.—ADULT MALE: Forehead (broadly), broad stripe above the ear (extending from forehead to back of head), *cheek region, throat* (sometimes upper part of chest also), *and rump, bright red;* rest of upper parts, hair-brown tinged with red; the wings and tail, dusky with pale grayish brown and brownish gray edgings; *under parts* (except throat, etc.) *dull whitish, thickly streaked with hair-brown*, the breast sometimes tinged with pale red; bill, dark horn-brownish; iris, brown. ADULT FEMALE: Similar to the adult male, but without any red, that of the upper parts replaced by the general hair-brown, that of throat, etc., by streaks of white and grayish brown, like rest of under parts.

Nest and Eggs.— NEST: Usually about houses, but located anywhere in trees, bushes, sagebrush, hay stacks, old boxes, tin cans, but always near water; carelessly or compactly constructed of any handy material, grass, string, paper, rags, straw, bark strips, or plant fibers. EGGS: 3 to 6, bluish white or pale greenish blue, sparingly marked with spots and lines of sepia or black; rarely unmarked.

Distribution.— Western United States and northern Mexico; north to southern Wyoming, southern Idaho, and Oregon; south to Tamaulipas, Nuevo Leon, northern Chihuahua, northern Sonora, and northern Lower California; east to western border of the Great Plains (middle Texas to western Kansas and southeastern Wyoming).

The House Finch or Red-headed Linnet through many parts of the West is the commonest bird about the dooryard. It is even more abundant and more familiar than the Robin through the northern States. It is especially fond of nesting in vines about the porch, a cypress hedge, or any favorable place not far from the house. The bird is so familiar and abundant through parts of California and it has such a strong taste for the fruits planted by man, that Red-head and his wife are often regarded as a nuisance. However, if a person is willing to trade his cherries, figs, and other fruit for bright bird music and companionship, the Linnet is willing to give full value for all the fruit he takes.

While studying birds at Tucson, Arizona, in the spring of 1910, we found the House Finch one of the commonest residents. We used to watch a pair daily through the Virginia creeper that shaded our porch and window. There were the remains of two old nests, one at the corner of the porch and one in front of the window.

One morning early, we saw the male and female looking at the nest by the window. He of the Red-head turned around and around on the remains of the old nest as if saying, "Come

Photo by W. L. Finley and H. T. Bohlman

HOUSE FINCH

In many places he is regarded as a nuisance

on; we can fix this up. We can add a little to it and have a modern house." But this did not suit the lady, for she turned and flew away in disgust and he followed. Yet in a little while, they were back again discussing the same question. We saw the wife take hold of one of the old strings as if she thought it might be a good idea to use it in the new home. At least, it would save a little hunting. And, indeed, that is just what they did. They built a new nest about six feet away. Occasionally when they got tired of hunting straws and strings for the new house, they pulled a little out of the old nest until the last straw was used.

Out in San Clemente Island off the southern coast of California, we found House Finches were very numerous about the sheep camp. There were no trees in which they could nest, so their homes were found in every odd corner about the sheds. I counted about forty nests, some old, and many new ones containing eggs. The door of the blacksmith shop was tied open and in behind this I found a nest wedged and resting on an inch strip. A House Finch was sitting on five eggs. Had the door been untied, the nest would have fallen to the ground. I found another nest in an old can that was hung against the wall. On nearly every beam and bracket in the sheep sheds, was a Linnet's home. Some of these, I could see, had been used over and over again, the bird, of course, remodeling or building a little on the old home. The birds used the material closest at hand. Many of the nests were made of wool that had been thrown about on the floor. The only fruit about the island was that of the cactus and this seemed to satisfy the Linnets. Whenever a sheep was killed and the Mexicans hung the fresh meat out in the open, the Linnets took their share. I saw where all the meat had been picked from several bones that were hanging up.

William L. Finley.

There are several varieties of the House Finch south of the United States and Mexican border. North of the boundary is one local form, the San Clemente House Finch (*Carpodacus mexicanus clementis*) found in the Santa Barbara Islands, California, and darker in coloration than the House Finch.

Observations in orchards show that in the fruit season, the House Finch is not backward in taking what it considers its share of the crop, and as it spends much of its time there, field observations alone would lead to the conclusion that fruit was its principal article of diet.

Examination of stomach contents proves that such is not the case, and when we find how small is the relative percentage of fruit eaten, it seems strange that its fruit-eating proclivities should have attracted so much attention. But it must be borne in mind that the bird is wonderfully abundant, which is a primary condition under which any species may become injurious. Moreover, it must be noted that not all of the fruit destroyed is eaten. Only one peck from the strong bill is necessary to break the skin of the pear, peach, or cherry, and the fruit is spoiled; the House Finch by no means invariably visits the same individual fruit a second time to finish it, but often attacks a fresh one at each meal. This is proved by the large number of half-eaten fruits, either on the tree or on the ground beneath.

While the strong, conical beak of the House Finch is a very effective instrument in attacking fruit, this is evidently not the use for which nature primarily designed it. Hard-billed birds are supposed to feed on seeds and that this species is no exception has been proved by examinations of contents of over 1200 stomachs. Seeds of plants, mostly those of noxious weeds, constitute about seven-eighths of its food for the year and in some months amount to much more.

CROSSBILL

Loxia curvirostra minor (*Brehm*)

A. O. U. Number 521 See Color Plate 77

Other Names.—American Crossbill; Red Crossbill; Common Crossbill.

General Description.—Length, 6 inches. Male, dull red; female, grayish-olive. Bill, with the tips crossed in adults; wings, long and pointed; tail, short, narrow, and deeply forked.

Color.—Adult Male: General color, dull red (varying from dull brownish scarlet or almost orange-chrome in summer to a hue approaching dragon's blood red in winter), the red brightest on rump, dullest on back and shoulders, where the feathers have dusky brownish centers; middle of abdomen, light grayish;

Courtesy of the New York State Museum

CROSSBILL *Loxia curvirostra minor* (Brehm)

FEMALE — IMMATURE MALE — ADULT MALE

WHITE-WINGED CROSSBILL *Loxia leucoptera* Gmelin

IMMATURE MALE — MALE — FEMALE

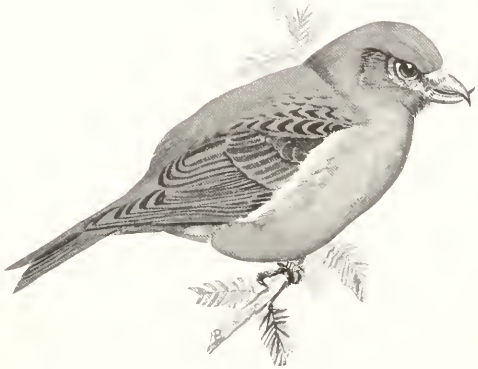
All ⅔ nat. size

bill, horn color, more dusky at tips; iris, brown. ADULT FEMALE: The red of the adult male replaced by grayish-olive or olive-grayish overlaid with bright yellowish olive or dull saffron-yellow, this brighter color always evident on rump and sometimes prevalent over under parts (except abdomen and under tail-coverts); wings and tail, less dark, more grayish dusky. YOUNG: Wings and tail as in adult female; upper parts, pale grayish mixed or tinged with olive on back and shoulders (sometimes almost white on head, neck, and rump) everywhere broadly streaked with dusky; beneath, whitish, usually tinged with olive, conspicuously streaked with dusky or dusky olive.

Nest and Eggs.— NEST: Placed, like the White-winged Crossbill's, in conifers, usually within 20 feet of the ground; outside "wall" constructed of evergreen twigs, shreds of bark, rootlets with a thick lining of moss, leaves, grass, cottony fibers well felted together, and generally some green bits of hemlock or cedar tips. EGGS: 3 or 4, pale greenish, specked and spotted with shades of brown and purplish gray.

Distribution.— Northern and eastern North America, breeding in coniferous forest districts from southern Alleghenies in northern Georgia (sporadically toward coast in Maryland, Virginia, etc.), Michigan, etc., to Nova Scotia, to Fort Anderson in the interior, and to western Alaska, and southward through Pacific coast district to western Oregon; in winter irregularly southward to South Carolina (vicinity of Charleston), Louisiana, Nevada, etc.; casually to the Bermudas.

The Crossbill is the only American bird with the curious crossing of the bills. No group of water birds or parrots or ducks or tropical birds of any kind have crossed bills. Only this one genus of *Loxia* in the Finch family is so peculiarly fashioned. Because of this singular characteristic, they are among the most interesting birds in the American avifauna.



Drawing by R. I. Brasher

CROSSBILL (¼ nat. size)

Don't pity this bird because of his crossed bill; it 's exactly what he needs

All-wise man has been known to point to the Crossbill as one of the "blunders" of Nature, and to sympathize with the poor creature thus "deformed." If such an observer had taken the pains to do a little real observing, he would have discovered that the crossed bills are really a special and very clever adaptation to the bird's feeding habits. For an important part of the Crossbill's diet consists of pine-cone seeds, and these it readily obtains by means of its "deformed" bill. The process consists in inserting the closed bill into the side of the cone, and then opening the mandibles with a movement which tears out the scales and thus leaves exposed the seeds at their bases. These seeds are then seized by the peculiarly shaped, scoop-like tongue. By this operation the bird will cut an apple to pieces in a few seconds to get at the seeds. The mandibles are operated by muscles so powerful that the bird will splinter solid wood with them; and they can be closed tightly enough to hold the smallest seed.

Many of the careful bird observers of the northern States have never seen a Crossbill. This is largely a matter of accident, the bird student not happening to be at the same place as the bird, whose wandering habits are very uncertain. No one can expect to go into any piece

of cone-bearing forest and find Crossbills; there may not be a Crossbill within a hundred miles.

Some observations have been made south of Canada in the summer time in most unexpected localities, but it is from November to March that flocks of from a few dozen to a few hundred roam about from forest to forest, and occasionally fly about towns where coniferous trees are scattered or where small frozen apples and hard rose seeds tempt the birds to a side dish. Dr. Merrill reports them as common at Fort Sherman, Idaho, where they can be seen every month of the year and are as tame as English Sparrows. But in the east the eccentric wanderings of the flocks have made their visitations events of importance to bird observers.

Their *kimp-kimp* or *pip-pip,* somewhat like a chicken peeping, is the conversational chatter that can be heard while a few dozen birds are breaking up the cones far up in the trees. The song, given only during the breeding season, is said by Gerald Thayer to be "a series of somewhat goldfinch-like trills and whistles."

Alfred Newton in his *Dictionary of Birds* says of the process of feeding on cone seeds: "Fortunately the birds soon become tame in confinement, and a little patience will enable an attentive observer to satisfy himself as to the process, the result of which at first seems almost as unaccountable as that of a clever conjuring trick."

European Crossbills have been imported into America, but it is not known if the stock has continued. The largest of the Crossbills is the Mexican Crossbill (*Toxia curvirostra stricklandi*) whose northern area extends up into the higher mountains of Arizona and New Mexico. These birds are about an inch longer than the eastern variety. After the breeding season the Mexican variety comes down out of the mountains. Dr. Mearns found them one year among the most commonly seen birds of Arizona, flying about at all times at the watering places and springs.

The White-winged Crossbill (*Loxia leucoptera*) is similar in general appearance to the American Crossbill but somewhat larger, the red of the male rose-red or even crimson, and the wings in both sexes, old and young, with two conspicuous white bars. (See Color Plate 77.) It is less known than the other Crossbills, and ranges a little farther north toward the arctic seas. It seems to be somewhat less common than the Red Crossbill. The flocks seem a little more active and shy, are apt to remain in the tops of trees if food is plenty there, and fly about calling their *cheep, cheep* loudly and less sedately than the Red Crossbill. Many years will sometimes elapse before numerous flocks will be seen in the northern States in winter. Then the conspicuous white wing-bars and the rosy red males will make their appearance for a few winter weeks. Toward spring its song has sometimes been heard in the wandering flocks. Elon H. Eaton says that it is "a beautiful song, perhaps more melodious than that of the Red Crossbill, a low, soft warbling, suggesting somewhat the song of the Redpoll." Its nidification is similar to the Common Crossbill's. The eggs are light blue, spotted around the large end with sepia, black, and lilac; they number three to five and are laid in the winter or early spring when the ground is covered with snow.

L. Nelson Nichols.

The Crossbills are of little importance from an economic standpoint. Very little is known of their summer food; they probably eat some insects. On their winter visits to the United States they show their fondness for the seeds of the arbor vitæ, tamarack, various spruces, firs, and pines. The peculiar structure and strength of their bills enable them to tear open the strongest and toughest cones and extract the seeds. Occasionally they injure an evergreen by cutting the twigs or destroying the terminal buds, but as a rule this damage does not amount to much.

GRAY-CROWNED ROSY FINCH

Leucosticte tephrocotis tephrocotis *Swainson*

A. O. U. Number 524

Other Name.— Gray-crowned Leucosticte.

General Description.— Length, 7¼ inches. Body, brown; crown, gray. Bill, shorter than head; wings, long and pointed; tail, about ⅔ length of wing, and forked; legs short. Generally found on the ground.

Color.—Adult Male in Summer: Forehead and part of crown, black; nasal tufts, grayish white; sides of crown (from above eyes backward) and whole of back of head, plain light ash-gray, very strongly contrasted with the contiguous brown color of the ear

regions and hindneck, whole side of head below eyes (whole of ear and cheek regions), neck, back, shoulders, and under parts, chestnut-brown, darker on throat, lighter on back where indistinctly streaked with dusky; feathers of rump and flanks, together with upper and under tail-coverts, broadly and abruptly tipped with pink; the remaining portion of the feathers dusky, especially on the rump and upper tail-coverts; wings and tail, dusky; the lesser and middle coverts, broadly tipped with pink; the greater coverts, primary coverts, and part of wing quills edged with pink or light scarlet, tail-feathers also with lighter edgings but with less of pink; bill entirely black. ADULT MALE IN WINTER: Similar to summer male but shoulders and space between with distinct edgings of lighter brown, feathers of breast, etc., with narrow, pale margins; the pink markings, especially on wings and flanks, of a softer hue, and the bill yellowish with dusky tip. ADULT FEMALE: Similar to adult male, with the same seasonal differences of color, but averaging paler and duller.

Nest and Eggs.—NEST: In a rocky crevice at high altitudes; constructed of grasses, weed stems, lined with fine grass and a few feathers. EGGS: 3 to 5, pure white, sharp pointed, with a peculiar fine shell texture.

Distribution.—Interior districts of North America; breeding on higher parts (11,000–12,000 feet) of White Mountains and Sierra Nevada, southeastern California, and probably also northward; during migration east to western Nebraska, eastern Colorado, Manitoba, etc.; south to Colorado, Utah, etc.; west to Cascade and Sierra Nevada ranges; north to plains of the Saskatchewan (May).

Amid the snowbanks and glaciers of western North America are found the Rosy Finches. They are optimistic little creatures living the gospel of "come storm or sunshine all is well." When it is cold and stormy they will seek out some sheltered spot and quietly wait for better weather. With the coming of the sun, out they scatter again, just as happy as ever. Where the vegetation is mostly moss and lichens and low-stunted spruce and when the weather is like the typical month of March these birds start their house-keeping.

Hepburn's Rosy Finch (*Leucosticte tephrocotis littoralis*) is similar to the Gray-crowned but the gray of the crown extends down the sides of the head; in typical examples the entire head except a black frontal patch and the throat are light ash-gray. It nests above the timber-line in Alaska and in winter comes south to Nevada, Utah, and Colorado, and along the Pacific coast to Kodiak, Sitka, and Vancouver Island.

The Black Rosy Finch (*Leucosticte atrata*) breeds in the mountains of Idaho and winters in Colorado and Utah. It is a little smaller than the Gray-crowned with the same marking on the head, but the body is brownish black.

The Brown-capped Rosy Finch (*Leucosticte australis*) has no distinct or clear grayish markings on the head. It breeds above the timber-line on the high mountains of Colorado, descending to the valleys and plains and south to New Mexico in the winter.

The food of the Rosy Finches is mainly insects and seeds which have been blown to the mountain heights by the storms. They hunt for the chilled insects and the seeds along the edge of the melting snows and they may be seen with their feathers fluffed, their faces turned toward the wind, busily hopping about and picking up their food, all the time cheerily chattering. Occasionally one will take shelter behind a stone or lump of snow and warm his toes against his warm little body.

REDPOLL

Acanthis linaria linaria (*Linnæus*)

A. O. U. Number 528. See Color Plate 78

Other Names.—Redpoll Linnet; Common Redpoll; Linnet; Lintie; Lesser Redpoll; Little Redpoll; Little Meadowlark.

General Description.—Length, 5½ inches. Upper parts, grayish-brown streaked with dusky; under parts, white and pink or buff; red cap. Bill, small, conical, and acute; wings, long and pointed; tail, long and deeply forked.

Color.—ADULT MALE IN BREEDING DRESS: Forehead (narrowly), dusky; *crown, bright poppy-red;* general color of remaining upper parts, dark grayish-brown or sepia, indistinctly streaked with darker and with grayish-white; rump, mixed pink and grayish-white, broadly streaked with dusky; upper tail-coverts, grayish-brown edged with paler; wings and tail, dusky grayish brown; the middle and greater wing-coverts, narrowly tipped with grayish-white; chin and upper portion of throat, dusky; *cheeks, lower throat, chest, and sides of breast, deep peach-blossom pink;* rest of under parts, white, the sides, flanks, and under tail-coverts broadly

streaked with dusky. ADULT MALE IN WINTER PLUMAGE: Much lighter colored than in summer, the prevailing color of back, shoulders, and hind neck, light buffy grayish-brown, distinctly streaked with dusky; the pink of chest, etc., paler (rose pink). ADULT FEMALE: Similar to the male, but without any pink or red on the under parts, the portions so colored on the male being pale buffy or whitish; the seasonal differences exactly as in the adult male. YOUNG: No red on crown, the whole crown being broadly streaked with dusky and pale grayish buffy; sides of throat, chest, and sides of breast, buffy or dull buffy whitish, streaked with dusky.

Nest and Eggs.— NEST: Placed in trees or bushes; bulky, loosely made exteriorly of twigs and grasses, warmly lined with feathers. EGGS: 2 to 5, pale bluish green, speckled around large end with chestnut, burnt-umber, and a few spots of black.

Distribution.— More northern portions of northern hemisphere; breeds southward to islands in Gulf of St. Lawrence; in winter south to more northern United States generally, irregularly and more rarely to Virginia, northern Alabama, southern Ohio, southern Indiana, Kansas, Colorado, southeastern Oregon, coast of Washington, etc.; casual in Bermudas.

The home of the Redpoll is in the northland. There he rears his family in a quiet business-like way. This accomplished he puts on his rosy suit and sallies forth with the snow for a vacation. He joins others of his own kind and is rarely found except in flocks of twenty to fifty, and sometimes there are 200 or 300. While on this winter tour the Redpolls visit and mingle with their cousins the Crossbills and the Goldfinches.

When he is at home the Redpoll has little time for singing — only indulging in a faint warbling or twittering — but with the throwing off of family responsibility he proves that he can sing delightfully. His song is more melodious than that of the Goldfinch; it has the quality of the *tweet* call of the Goldfinch and is delivered in the manner of the Goldfinch's warble. He also has at least four distinct call-notes: a loud twittering call, used when on the wing; a long *buzz*, not unlike one note of the Pine Siskin but thinner and longer; a conversational twitter, used when several birds are feeding together; and a *ker-weet*, very much like the long plaintive call of the Goldfinch but different in tone.

The Redpoll is very unsuspicious and often allows a person to approach very closely without taking alarm. Should one stand still near where they are feeding they will come closer and closer as they feed without a sign of fear.

Drawing by R. I. Brasher

REDPOLL (¾ nat. size)

A confiding little bird who comes south from the northland, especially when he is hungry

The Greater Redpoll (*Acanthis linaria rostrata*) is a resident of Greenland; in winter he comes south through Canada to northern Illinois, Michigan, northern Indiana, southern New York and Massachusetts. He looks like the Common Redpoll but is of greater size and has a relatively thicker and more obtuse bill. (See Color Plate 78.)

J. ELLIS BURDICK.

Very often when the Crossbill visits us there will be found in his company the Redpoll. After the stronger bird has torn open the cones the

REDPOLL
Acanthis linaria linaria (Linnaeus)
FEMALE MALE

PINE SISKIN *Spinus pinus* (Wilson)
GOLDFINCH *Astragalinus tristis tristis* (Linnaeus)
MALE AND FEMALE IN WINTER
GREATER REDPOLL *Acanthis linaria rostrata* (Coues)
MALE

All ⅔ nat. size

other will pick out the seeds. He also attacks cones himself, especially those of the tamarack and arbor vitæ, but not always successfully. To a large extent he feeds on the seeds of the birches and alders. He also eats grass seeds and weed seeds.

EUROPEAN GOLDFINCH

Carduelis carduelis (*Linnæus*)

See Color Plate 79

Other Names.— Thistle Finch; Thistle Bird.

General Description.— Length, 5½ inches. Body, brown; wings and tail, black; red spot on head. Bill, elongate, conical, and acute; wings, long and pointed; tail, rather short and deeply notched.

Color.—ADULTS: Fore part of head, all round, crimson; lores, back part of crown, back of head and neck, and bar from the latter halfway across side of neck, black; rest of head, white tinged with brownish buff; back, shoulders, and rump, plain brown; upper tail-coverts, white; wings and tail, mostly black; greater portion of greater coverts, basal portion of outermost secondaries, and basal half or more of exposed portion of outer webs of primaries, bright lemon-yellow; secondaries, primaries, and middle tail-feathers tipped with white, the inner webs of side tail-feathers, also partly white; sides of breast, sides, and flanks, plain cinnamon-brown or wood-brown; rest of under parts white; bill, whitish tinged with flesh color or lilac; iris, brown. YOUNG: Wings and tail as in adults, but the former with middle and greater coverts tipped with pale brownish, forming two bands; no red on head nor black on head or neck; crown and back of neck light grayish brown, mottled or streaked with darker; the back also streaked with dusky; chin and throat, whitish, the latter flecked with sooty brown; the foreneck, chest, and breast, mottled or spotted with the same.

Nest and Eggs.— NEST: A handsome thick-walled structure of vegetable down, moss, and fine grasses; the few noted in this country indicate a preference for conifer trees as a site. EGGS: 4 to 6, more commonly 5, pale greenish or bluish white, spotted with chestnut around large end.

Distribution.— Europe in general, except extreme northern portions; south, in winter, to Palestine and Egypt. Introduced into the northeastern United States and naturalized in Cuba, in New York city and vicinity, and Cincinnati, Ohio; accidental (?) at New Haven, Connecticut, near Boston, Worcester, etc., Massachusetts, Toronto, Ontario, etc.

The European Goldfinch is well known all over Europe and has been introduced into America. How many times and at what places the attempt has been made to Americanize this favorite of Europeans is uncertain. About 1872 it was introduced at Cincinnati, in 1878 at Hoboken, about 1880 in eastern Massachusetts, and in 1886 in Cuba. There may have been more importations. For a few years these beautiful birds were seen in the vicinity of New York city. In 1900 they were seen at nest building in Central Park. Dr. Chapman saw two in Englewood, N. J., in 1911, but records are very rare. There have been scattered observations in Massachusetts and Connecticut. In 1888 four birds were seen in Toronto and in 1899 one bird in Ithaca, N. Y. A German who knew the bird as the *Distelfink* (Thistle Finch) is confident that he saw one in Chicago in 1911. About New York city they had formerly been seen in flocks of American Goldfinches with which their manners and customs matched perfectly. It would seem that this cheery and attractive little bird is not to become as common as the English Sparrow, and "more's the pity." In Europe the Goldfinch has been a favorite cage bird for centuries. So many thousands were captured in Great Britain alone that Parliament had to take action for the protection of the bird. But it seems never to have been as common again.

GOLDFINCH

Astragalinus tristis tristis (*Linnæus*)

A. O. U. Number 529 See Color Plates 78, 79

Other Names.— Yellow-bird; Thistle Bird; Wild Canary; Catnip Bird; Lettuce-bird; Shiner; Salad-bird; Beet Bird; American Goldfinch.

General Description.— Length, 5 inches. Male in summer has the body lemon-yellow and the wings and tail black; male in winter and female at all seasons have the upper parts olive-brownish and the under parts grayish-white with the wings and tail blackish. Bill, small, conical, and acute; wings, long and pointed; tail, rather short and forked; legs, short.

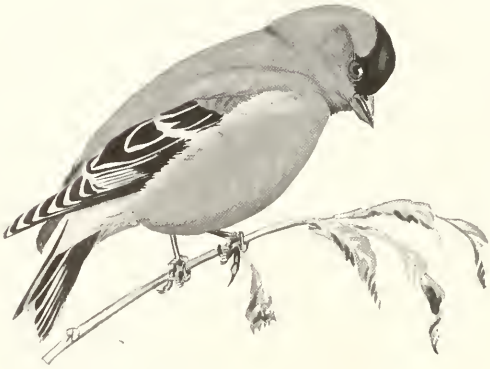
Color.—ADULT MALE IN SUMMER: General color pure lemon or canary-yellow; the lores, forehead, and crown, together with wings (except small coverts) and tail, black; tail-coverts, middle (sometimes also lesser)

wing-coverts, tips of greater coverts, and part of edges of wings, white; bill, orange or orange-yellow tipped with black; iris, brown. ADULT FEMALE IN SUMMER: Above, olive-brownish or grayish, sometimes tinged with olive-greenish; the wings and tail, blackish or dusky marked with white or whitish, much as in the male; upper tail-coverts, pale grayish or grayish-white; under parts, dull grayish-white tinged with yellow, especially in the front and on the sides, sometimes entirely soiled yellow, except under tail-coverts. ADULT MALE IN WINTER: Similar to the adult female but wings and tail deeper black, with whitish markings more conspicuous. ADULT FEMALE IN WINTER: Similar to the summer female, but more brownish. YOUNG: Somewhat like winter adults, but much browner, all the wing-markings, pale cinnamon, the plumage generally being suffused with this color.

Nest and Eggs.— NEST: Placed in forks of bush or sapling, sometimes on the swaying stalk of a wild blackberry, usually within 5 feet but sometimes 30 feet from the ground; a compact, artistic structure of felted plant down, mosses, grass, leaves, bark strips, usually lined with thistledown; build later than any other birds, from last week in June to second week in September; sometimes reconstruct old Blackbird or other nests, the added material being principally a heavy lining of down. EGGS: 3 to 6, sets of 5 and 6 being common, pale bluish white, unmarked.

Distribution.— United States and more southern British provinces east of Rocky Mountains, north to Manitoba, Ontario, Quebec, southern Labrador, and Newfoundland; breeding southward to the middle districts of the United States; wintering southward to Gulf coast.

The Goldfinch is one of the most interesting birds of American life. It is a bird the most casual observer can enthuse over, and one that the bird student will never tire raving about. The male is such a bright yellow bird with black wings and tail that he readily becomes known as the Wild Canary in any community where he is commonly seen. Then its habit of feeding about where people go to and fro, scarcely heeding the inquisitive humans, has increased the knowledge of the bird. But when the sun begins to warm the earth and air, and summer is here, the Goldfinch is then in his ecstasy. Swinging through the air, its *per-chic-o-ree, per-chic-o-ree* is as sweet in note as any caged Canary's. The abandon and wild delight of the bird at this season while most other birds are feeding their young has brought forth many interesting comments from the nature writers. Dr. Chapman in his *Handbook* says that "their love song is delivered with an ecstasy and abandon which carries them off their feet, and they circle over the field sowing the air with music." After most of the other birds are through with their nesting, and all of the others have already begun, the Goldfinch gathers his thistledown and fine grasses together for the nest in a berry bush or some other low shaded place just out of the sun's rays. The *per-chic-o-ree* changes gradually to notes more directly personal for the mate and young. *Tic-o-ree, o-ree, o-ree* and many variations are heard. There are those who insist that the male calls *ba-by, ba-bee* to the young in the nest. Certainly the notes are as sweet and in-



Drawing by R. I. Brasher

GOLDFINCH (⅔ nat. size)

A beautiful little fellow with jolly manners and a fine canary-like song

EUROPEAN GOLDFINCH
Carduelis carduelis (Linnaeus)

GOLDFINCH
Astragalinus tristis tristis (Linnaeus)
FEMALE AND MALE IN SUMMER

EVENING GROSBEAK *Hesperiphona vespertina vespertina* (W. Cooper)
MALE FEMALE

All ½ nat. size

sistent as any parent with such a throat could utter.

In the fall the males turn olive, something like the females and immature. They gather into flocks, a few dozen or a few hundreds and haunt the weedy fields and seedy marshlands where the lilt of the Canary-like note is apt to be heard even into the middle of winter. Let the sun but shine a little warmer in the early spring and maybe it will be a Goldfinch instead of a Bluebird that will greet the promise of spring. Its all hail will be *see-see-e* many times repeated.

From ocean to ocean this bird is common. In the Rockies it is larger and lighter with purer tints in winter plumage, and is there distinguished by the varietal name of Pale Goldfinch (*Astragalinus tristis pallidus*). On the Pacific coast the differences are not as great as in the mountains, but great enough to make a separate variety called the Willow Goldfinch (*Astragalinus tristis salicamans*). Down through the luxuriance of southern California they have been known as "gentle-spirited birds" that "seem as light-hearted as butterflies." (Mrs. Florence Merriam Bailey.)

In her *Birds Through an Opera Glass* the same author says of the Goldfinch in the east: "Being a vegetarian, his store-house is always well filled, for if the snow covers the seeds he would gather from the brown weed-tops, he goes to the alders in the swamp; and if they fail him he is sure to find plenty in the seeds of the hemlock, the spruce, and the larch."

L. Nelson Nichols.

In winter this Goldfinch feeds largely on weed seeds, the seeds of birches, and those of the buttonbush. In summer it subsists to a large extent on weed seed, but destroys many noxious insects, such as cankerworms, plant lice, small grasshoppers, and beetles. The habit of feeding on thistles which has given the species the common name of "Thistle Bird" is well exemplified by the following field note: A thistle on which a Goldfinch had been feeding was examined and on its leaves and the ground beneath sixty-seven seeds were counted. They appeared perfect, but close inspection showed a slit through which the meaty kernel had been deftly removed. Dr. S. D. Judd reports having been able to approach within ten feet of four Goldfinches who were feeding on ragweed. Often they would all alight on the same plant at once, then they would

Photo by J. H. Field

NEST AND EGGS OF GOLDFINCH

wrench off the seeds, extract the meat, and drop the shell, their actions resembling those of a Canary at its seed cup. In one instance three alighted on a very small plant, which under their weight bent to the ground. Nothing daunted, they clung to the sprays, heads downward, until they touched the earth, then shifting their position so as to hold the stems under their feet, went on with their meal.

ARKANSAS GOLDFINCH

Astragalinus psaltria psaltria (*Say*)

A. O. U. Number 530

Other Names.—Tarweed Canary; Arkansas Greenback.

General Description.—Length, 4½ inches. Upper parts, olive-greenish; under parts, yellow; wings and tail, black or dusky. Bill, small, conical, and acute; wings, long and pointed; tail, rather short and forked; legs, short.

Color.—Adult Male: *Crown, glossy black*; ear

region, hindneck, back, shoulders, and rump, olive-green; *wings, black with a large white patch at base of primaries;* greater wing-coverts, tipped with white or pale grayish; primaries narrowly and inner wing quills broadly edged with the same; upper tail-coverts, black, margined with olive-green; tail, blackish; *under parts, light yellow.* ADULT FEMALE: Above including crown, olive-greenish, the crown sometimes indistinctly streaked with dusky; wings, as in adult male, but general color grayish dusky instead of black; tail with the white on inner webs of exterior tail-feathers restricted to a squarish spot in middle portion; under parts, light olive-yellow. YOUNG: Similar to adult female, but tinged with buffy-brownish above, the lighter wing-markings buffy, and the under parts a paler and duller, or more buffy, yellow.

Nest and Eggs.— NEST: In small trees or bushes; a counterpart of the American Goldfinch's, but, like the eggs, smaller. EGGS: 4 or 5, pale bluish-green.

Distribution.— Western United States, from coast of California to eastern base of Rocky Mountains; north to northern California, southern Idaho, Utah, and Colorado; south, in winter at least, to southern Lower California and southern New Mexico and Arizona; breeding south to San Pedro Martir Mountains, northern Lower California.

There is a very near relative of the Goldfinch, residing exclusively in the western states; he is the Arkansas Goldfinch. He is a little smaller than the members of the more widely distributed family. A friendly little fellow is he, constantly found in gardens and along the roadsides, sometimes busily feeding among the weeds on the ground and again tossing his song to the winds from the top of some tall eucalyptus tree.

This Goldfinch is a long time acquiring the full adult plumage and first breeds in the immature plumage. This fact led to a great deal of confusion, and the three stages of development were each given a different name until enough specimens had been collected to prove that the variations were due merely to age.

A slightly variant form of the Arkansas Goldfinch is known as the Green-backed Goldfinch (*Astragalinus psaltria hesperophilus*) and is found in the southwestern United States and northwestern Mexico from California and Lower California to Utah, Arizona, and extreme southwestern New Mexico.

The Arkansas Goldfinch feeds almost entirely on weed seeds.

PINE SISKIN

Spinus pinus (*Wilson*)

A. O. U. Number 533 See Color Plate 78

Other Names.— Pine Finch; Pine Linnet; American Siskin; Northern Canary Bird.

General Description.— Length, 4¾ inches. Upper parts, grayish; under parts, white; streaked above and below with dusky. Bill, small, conical, and acute; wings, long and pointed; tail, rather short and forked; legs, short.

Color.—Above, grayish or brownish, conspicuously streaked with dusky, the ground color of the rump paler (whitish or light grayish); wings and tail, dusky or dull blackish; middle and greater wing-coverts, tipped with whitish, and inner wing quills edged with same; basal portion of wing feathers (especially secondaries) and tail feathers, pale yellow, mostly (often entirely) concealed; under parts, dull white, everywhere (except on abdomen and anal region) streaked with dusky.

Nest and Eggs.— NEST: Usually located in a conifer, from 20 to 30 feet up, well concealed; walls roughly constructed of hemlock or other twigs and moss; a saucer-shaped structure one-half foot across; the interior, about two inches in diameter, is carefully and thickly lined with plant down, fur, and hair. EGGS: 4 to 6, pale bluish or greenish white lightly spotted with chestnut and some black.

Distribution.— Northern coniferous forest districts of North America, breeding south to Nova Scotia, New Brunswick, parts of New England, lower Hudson valley, mountains of Pennsylvania, and southward to high mountains of North Carolina, Minnesota, etc., and on the high western ranges quite to the southern boundary of the United States; in winter, south to Gulf coast (including Florida and Texas), valleys of California, etc., and into Mexico; casual or accidental in Cuba.

Someone has said that any bird is frequent enough to be common if you go where it breeds. The Pine Siskin breeds from the Atlantic to the Pacific and yet very few people have ever seen the bird. The reason is that the bird not only confines itself pretty closely to the evergreen mountain forests, but even there it is uncertain in its abode. One year it may be seen in large numbers about one group of mountain peaks and valleys. The next year not a Siskin can be found in the whole district. This uncertainty in its breeding areas is as nothing to the eccentricity of the fall and winter ramblings. Many winters pass without a Siskin being seen about New York city, Boston, Washington, and Chicago. Then again there are winters when they are tolerably common. Its notes are somewhat similar to the Goldfinch's. T. M. Trippe of Colorado wrote to Dr. Coues that "in spring it sings very agreeably, very much like the latter bird [the Goldfinch], but in a lower voice; and like it has the habit of singing in a lively, rambling sort of way for an hour or more at a time."

The birds congregate in large flocks after the breeding season. There is nothing particularly interesting to attract an observer to a flock feeding quietly in the weeds. They look like plain little striped brown Sparrows. Startle them and the flock as one bird will rise and wheel off to a more distant feeding ground. A quick observer will notice the yellow patches on the wings and tail. Then too they may utter weak *tit-i-tit* notes, or on occasions will break out in Goldfinch-like *see-a-wee* notes that betray the close relationship to the Wild Canary. Herbert K. Job calls them Northern Canary Birds, and says that he found them in their nesting grounds in June in northern Nova Scotia; and that they were singing prettily in the shade trees along the streets of Pictou. Wells W. Cooke said that in Colorado the Siskins range from the timber-line in the high mountains down to about 7000 feet above sea level. "Some stay near the timber-line through the winter, but the bulk scatter over the lower valleys and plains."

Herbert K. Job says that it was early in October when he saw the Siskins for the first time. He was hunting Partridge and Woodcock and in an opening in the woods he saw a flock of them alight on a tree. Trembling with excitement he fired into the midst of them and obtained a number of specimens. Never since has he seen so large a flock. The ordinary bird observer may not be so excited as Mr. Job was, but he had better look long and earnestly when he sees his first flock, for it may be many a day before he sees the second.

L. Nelson Nichols.

The Pine Siskin is very similar in his habits to the Goldfinch and the Redpoll and associates very freely with them. Not infrequently he is seen with Crossbills. He feeds principally on the seeds of the white cedar, tamarack, and the various pines and spruces. When the ground is bare he eagerly eats the fallen seeds of maple, elm, and other trees, as well as grass and weed seeds. Frequently he is reported in the spring as feeding on dandelion seeds.

ENGLISH SPARROW

Passer domesticus (*Linnæus*)

Other Names.— European House Sparrow; Gamin; Tramp; Hoodlum; Domestic Sparrow.

General Description.— Length, 5¾ inches. Upper parts, reddish-brown, streaked with black; under parts, grayish-white. Bill, stout, shorter than head; wings, of medium length; tail, about ¾ length of wing; legs, short and rather stout.

Color.—Adult Male: Crown, deep gray or olive-gray bordered laterally by a broad patch of chestnut extending from behind the eye to sides of neck; chin, throat, and chest, black; a small white spot above rear angle of the eye; back and shoulders, rusty brown streaked with black; lesser wing-coverts, chestnut; middle coverts, blackish tipped with white forming a conspicuous bar; rest of wings, dusky with light brown and rusty brown edgings; rump, olive or olive-grayish; tail, dusky edged with light olive or olive-grayish; cheek region and sides of throat, white; under parts of body, dull grayish white, more grayish laterally; bill, black. Adult Female: Crown and hindneck, grayish brown or olive; chin, throat, and chest, dull brownish white or pale brownish gray like rest of under parts; otherwise like the adult male, but back browner.

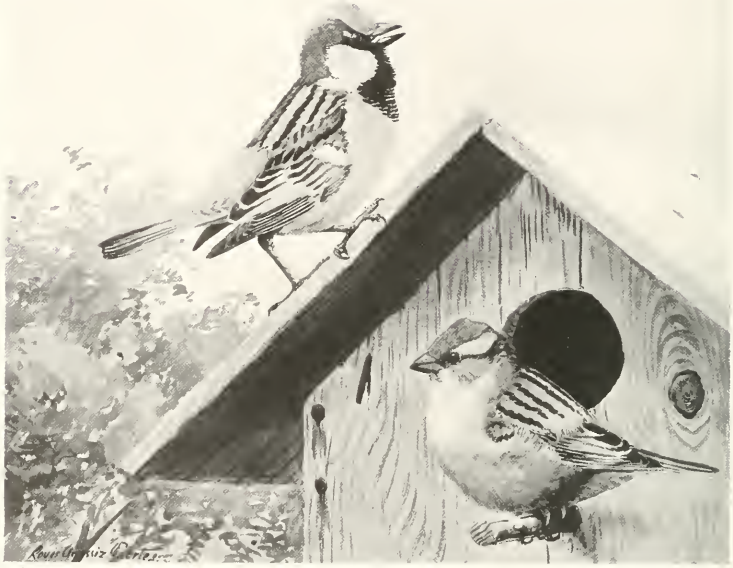
Nest and Eggs.— Nest: Occasionally built in trees, more often in bird-houses, electric-light hoods, cornices, water-spouts, and similar places; tree-nests large and covered, others open; made of grasses or any easily obtained material, loosely put together, and lined with feathers. Eggs: 4 to 7, generally white, finely and evenly marked with olive, but also varying from plain white to almost uniform olive brown; two broods at least in a season, usually three, and sometimes four and even five.

Distribution.— Europe in general, except Italy; introduced into the United States, where thoroughly and ineradicably naturalized in all settled districts, except southern Florida and a few other extreme outposts; also introduced into Bahamas (island of New Providence), Cuba, Nova Scotia, Bermudas, and southern Greenland.

The English Sparrow or European House Sparrow was introduced into America in 1850. In the fall of that year eight pairs were brought to Brooklyn, N. Y., and liberated in the following spring. Since that time many importations have been made, and small lots of sparrows have been carried from one locality to another until now the bird is naturalized nearly all over the United States. This rapid dissemination is a result of the bird's hardiness, extraordinary fecundity, diversity of food, aggressive disposition, and almost complete immunity from natural enemies.

Although English Sparrows are widely distributed as a species, individuals and flocks have an extremely narrow range, each flock occupying one locality and confining its operations to that particular territory.

The House Sparrow is a persistent enemy of many native birds, especially those which frequent the neighborhood of houses, or which nest in boxes, holes, or other places prepared for them by their human friends. Being a winter resident, he starts his nesting early and when the other birds arrive, all the available nesting sites are occupied and the new-comers must either fight for a place or go elsewhere. Not infrequently he directly attacks Robins, Song Sparrows, Chickadees, Flycatchers, Thrushes, Tanagers, and other birds, while they are feeding and annoys them by repeated calls at their homes.



Drawing by L. A. Fuertes — Courtesy of U. S. Dept. of Agriculture

ENGLISH SPARROWS

Male — Female

Taking possession of a nesting box provided for a native bird

The filthy habits of these birds are most annoying. They gather in immense flocks to roost, and generally select cornices, ornamental work about the eaves and gables of houses, window-cappings, and the vines which cover the walls of buildings. These they defile with their excrement. Great and serious damage is often caused by their carrying nesting materials into rain-spouts, gutters, and similar places about houses, so that cisterns are defiled, or pipes overflow, causing destruction of or injury to property.

The English Sparrow, when once established increases with wonderful rapidity. At least two broods are raised in a season, but the usual num-

ber is three and trustworthy observers have recorded four and five. Very seldom are there less than four birds in a brood and the old birds are generally successful in getting the young on the wing without any accidents. Therefore an immense number of these Sparrows can be raised in a limited area in one season. A dozen pairs in the course of three or four years will have increased, if let alone, to thousands.

The English Sparrow among birds, like the rat among mammals, is cunning, destructive, and filthy. Its natural diet consists of seeds, but it eats a great variety of other foods. While much of its fare consists of waste material from the streets, in autumn and winter it consumes quantities of weed seed and in summer numerous insects. The destruction of weed seed should undeniably count in the Sparrow's favor. Its record as to insects in most localities is not so clear.

In exceptional cases it has been found very useful as a destroyer of insect pests. For example, during an investigation by the United States Biological Bureau of birds that destroy the alfalfa weevil, English Sparrows were feeding their nestlings largely on weevil larvæ and cutworms, both of which are very injurious to alfalfa. In this case the Sparrows, attracted by grain in the fields and poultry runs and by the excellent nest sites afforded by the thatched roofs of many farm buildings, had left the city and taken up their abode in the country where the weevil outbreak subsequently occurred. Unfortunately, however, farmers can rarely expect such aid against their insect foes. Whenever this bird proves useful it is entitled to protection and encouragement in proportion to its net value. Under normal conditions its choice of insects is often unfavorable.

The English Sparrow destroys fruit, as cherries, grapes, pears, and peaches. It also destroys buds and flowers of cultivated trees, shrubs, and vines. In the garden it eats seeds as they ripen, and nips off tender young vegetables, especially

Photo by H. T. Middleton

FEMALE ENGLISH SPARROW

peas and lettuce, as they appear above ground. It damages wheat and other grains, whether newly sown, ripening, or in shocks. As a flock of fifty Sparrows requires daily the equivalent of a quart of wheat, the annual loss caused by these birds throughout the country is very great. It reduces the numbers of some our most useful native birds, as Bluebirds, House Wrens, Purple Martins, Tree Swallows, and Barn Swallows, by destroying their eggs and young and by usurping nesting places.

SNOW BUNTING

Plectrophenax nivalis nivalis (*Linnæus*)

A. O. U. Number 534. See Color Plate 80

Other Names.—Snowflake; Snow Lark; Snowbird; Whitebird; White Snowbird.

General Description.—Length, 8 inches. In Summer: Male, white with black markings; female, white, streaked on upper parts with black. In Winter: Both sexes have the upper parts stained with rusty. Bill, with lower section thicker than the upper section; wings, long and pointed; tail, about 3/5 length of wing, forked, and the middle pair of feathers pointed at the tip.

Color.—Adult Male in Summer: General color, pure white; back, shoulders, innermost secondaries, and greater wing-coverts, greater part of primaries, and four to six middle tail-feathers (sometimes rump also), black; bill, black; legs and feet, black, or the former sometimes dark brown. Adult Male in Winter: Similar to the summer plumage, but the white parts (except under parts of body) stained with rusty brown, especially on crown (where sometimes rich dark brown) and hindneck, and the black of the back, shoulders, etc., broken (sometimes almost concealed) by broad margins of rusty and buffy whitish; bill, yellow. Adult Female in Summer: Crown, dusky, the feathers margined with dull whitish or pale grayish buffy; hindneck, dull whitish or pale dull buffy, streaked with dusky; back and shoulders (sometimes rump also), dull black or dusky, the feathers margined with dull whitish (their edgings quite worn off in midsummer plumage); lesser and greater wing-coverts, blackish margined and edged with whitish; greater part of secondaries, three outermost tail-feathers, and under parts (sometimes rump also), white; bill,

dusky. ADULT FEMALE IN WINTER: Similar to summer female, but upper parts stained with rusty brown, especially on crown, ear region, and sides of chest, and margins to feathers of back, etc., paler, broader, and more buffy or buffy grayish; bill, yellowish. YOUNG: Head, neck, back, shoulders, and rump, brownish gray tinged with olive, the back streaked with dusky; front under parts paler gray than upper parts, the chest and sides of breast usually very faintly streaked with dusky; under parts of body, mainly white, usually tinged with pale olive-yellowish; wings and tail, much as in winter adults.

Nest and Eggs.— NEST: On the ground in grassy tussocks; a large, well built structure, exteriorly composed of dried grass, moss woven into thick walls, the small, deep center thickly feathered. EGGS: 4 to 6, white or pale greenish white, spotted with raw umber and lavender.

Distribution.— Northern parts of Europe, Asia, and North America; breeding in arctic and subarctic districts; in North America breeding on the barren-ground or tundra region from northern Labrador to Alaska, north and east of the coast ranges, and north to islands of Arctic Ocean (at least to latitude 82°); in winter south to more northern United States, irregularly to District of Columbia, Florida, Georgia, southern Ohio, southern Indiana, Kansas, Colorado, northern California, and eastern Oregon; casually to the Bermudas; south in Asia to northern Japan and China.

When the polar explorers have pushed far beyond the Eskimo villages and out into the wastes where the musk-ox and blue fox live, there they find the Snow Bunting or Snowflake in his nesting home. Across the polar islands along the northern shore of Alaska and only as far south as the bleak and inhospitable shores of Hudson's Bay, these birds may be found in the breeding season. Only in the depth of winter do they drift on down into the northern United States to haunt the snow-swept hillsides of the farms, and the bleak and stormy shores of New England at their bleakest and stormiest season. They are so much whiter than other Sparrows that they seem indeed like animated gusts of arctic weather as they pass along over the ground, the rear birds drifting on over to the front of the advancing ranks. Many a person muffled to the eyes in a cold winter's sleigh ride has seen the Snowflakes feeding cheerily and by choice out in the bitter biting zero weather of wind-swept fields. Sometimes, indeed, they will straggle far south, even to the Gulf coast, but the first sign of advancing spring will send them on their long flights far across Canada to areas little known and to some not yet explored.

While flying, the members of the flock keep up a tinkling whistle, a note that has been likened to the syllable *tee* repeated at intervals by the various members of the flock; when disturbed, they utter a harsh *beez-beez*. What sweet, weird song they sing to the sunrise of the morning of the six-months arctic day, the explorers have yet to tell us. Dr. Elliott Coues gives an interesting account of these birds at Fort Randall on the Missouri River, some distance above Yankton (*Birds of the Northwest.*) The Snowflakes "reached Fort Randall November 15, after a severe cold snap with a light snow-fall, and as I write (January), great numbers are swirling over the ground around and in the fort. They keep pretty closely in flocks numbering from a dozen or so to several hundred, and, though they spread over the ground a good deal in running about after seeds, they fly compactly, and wheel all together. In their evolu-

Drawing by R. I. Brasher

SNOW BUNTING (½ nat. size)

A hardy and beautiful winter visitor from the northland

TREE SPARROW *Spizella monticola monticola* (Gmelin)
SNOW BUNTING *Plectrophenax nivalis nivalis* (Linnaeus)
$\frac{3}{4}$ nat. size

tions they present a pretty sight, and have not a displeasing stridulent sound, from mingling of the weak chirrups from so many throats."

John Burroughs rises to his best literature as he speaks of this bird (*Far and Near*). "The only one of our winter birds that really seems a part of the winter, that seems to be born of the whirling snow, and to be happiest when storms drive thickest and coldest, is the Snow Bunting, the real snowbird, with plumage copied from the fields where the drifts hide all but the tops of the tallest weeds, large spaces of pure white touched here and there with black and gray and brown. Its twittering call and chirrup coming out of the white obscurity is the sweetest and happiest of all winter bird sounds. It is like the laughter of children. The fox-hunter hears it on the snowy hills, the farmer hears it when he goes to fodder his cattle from the distant stack, the country schoolboy hears it as he breaks his way through the drifts toward the school. It is ever a voice of good cheer and contentment."

In the Far North are found two other members of this branch of the Finch family. They never come as far south as the United States. The Pribilof Snow Bunting, or Aleutian Snowflake (*Plectrophenax nivalis townsendi*) is similar to the better known Snow Bunting but decidedly larger with a relatively longer bill. As his name indicates his home is among the Aleutian Islands; he is also found on other islands of that region and along the Siberian coast of Bering Sea. McKay's Snow Bunting or Snowflake (*Plectrophenax hyperboreus*) is similar to the Pribilof Snow Bunting, but with much more white, the back and shoulders of the adult male being entirely white. This Snow Bunting breeds on Hall Island and St. Matthew's Island, north-central part of Bering Sea; in the winter it migrates to the western portion of the Alaskan mainland. L. NELSON NICHOLS.

The Snow Bunting feeds almost exclusively from the ground; the reports of his feeding in trees are rare. Small seeds — pigweed, ragweed, and all kinds of grass — are his chief foods. From Nebraska comes a statement that he always eats locusts' eggs when they are obtainable.

LAPLAND LONGSPUR

Calcarius lapponicus lapponicus (*Linnæus*)

A. O. U. Number 536

Other Name.— Common Longspur.

General Description.— Length $7\frac{1}{4}$ inches. Upper parts, light brownish, streaked with blackish; under parts, white. Bill, small; wings, long and pointed; tail, more than $\frac{2}{3}$ length of wing, and double rounded; hind claw, long and slender.

Color.— ADULT MALE IN SUMMER: *Head and chest, deep black*, relieved by a broad white or buffy stripe behind eye, continued downward (vertically) behind ear-coverts and then backward along sides of chest; sides, broadly streaked or striped with black; rest of under parts, white; hindneck, deep chestnut-rufous; rest of upper parts, light brownish, broadly streaked with blackish; lesser wing-coverts, grayish, feathers black in center. ADULT MALE IN WINTER: Black of head confined to crown, posterior and lower border of ear-coverts, lower part of throat, and patch on chest, all more or less obscured by whitish or pale brownish tips to feathers; sides of head (including lores and greater part of ear-coverts), mostly dull light brownish; rufous on hindneck also similarly obscured. ADULT FEMALE IN SUMMER: Much like the winter male, but markings more sharply defined, black areas of chest, etc., more restricted and still more broken, hindneck streaked with blackish and size smaller. ADULT FEMALE IN WINTER: Similar to summer plumage, but browner and less sharply streaked above, hindneck often without trace of rufous, lower parts dull brownish-white, and dusky markings very indistinct.

Nest and Eggs.— NEST: On ground or in tussock of grass; constructed of fine dried grass and moss; lined with feathers or fur shed from the winter coats of the arctic fox. EGGS: 3 to 6, dull white specked and spotted and clouded with umber-brown so thickly as almost to obscure the ground color.

Distribution.— Breeding in arctic and subarctic districts of Europe, northeastern North America, including Greenland, and for an undetermined distance westward to at least the more western portions of Siberia; in North America migrating south in winter (more or less irregularly) to Virginia, South Carolina, Kentucky, eastern Kansas, Oklahoma, and even to Texas; west during migration to eastern portion of Great Plains (Manitoba to Texas).

The general characteristics of the Longspur family are the small acutely conical bill, which is deeper at the base than it is wide; exposed nostrils; long, pointed wing; tail more than half hidden by the pointed upper coverts; and a slender and nearly straight hind claw about the length of the toe. There are three species, differing considerably in details of form. The type species is the Lapland. Smith's Longspur, or the Painted Longspur (*Calcarius pictus*), found on

the interior plains of North America east of the Rocky Mountains from the Arctic coast in summer south to Texas in winter, is very similar to the Lapland, but has a slenderer and more pointed bill. The Chestnut-collared Longspur (*Calcarius ornatus*) differs from the other two species in having the tail much shorter than the distance from the carpal or wrist joint of the wing to the end of the wing-quills. The Chestnut-collared is also an inhabitant of the great plains of the United States, but instead of extending his range to the north he prefers Mexico.

A relative of this family — so close a relative that he has adopted the family name for popular use — is McCown's Longspur (*Rhynchophanes mccowni*). He is found on the interior plains of North America, east of the Rocky Mountains. His bill is much larger and relatively thicker and his tail relatively shorter than in his cousins. His nostrils are nearly concealed by well developed soft feathers. The Lapland Longspur and its varieties, the Alaska and Siberian Longspurs (*Calcarius lapponicus alascensis* and *Calcarius lapponicus coloratus*), inhabit a broad subarctic belt around the world during the breeding season. In North America the Alaska occupies the northwestern tundras east to the Mackenzie country. From there east to northern Labrador and Greenland the species is the same as the one that extends across northern Europe and east into western Siberia. It derives its name from that part of the northern Russian tundras called Lapland. The differences noted in America between the Alaska and Lapland are so slight that they may be generally disregarded by the casual student. In the winter they come down to the northern States to stay only as long as the northern barrens are swept by the unbearable storms. While here they are seen in the most numbers in broad prairie lands and along the wide sloping mountain meadows. In the East they are not as commonly seen, but many Snowflake flocks have a few Longspurs. The Shore Larks that feed up and down the wintry seashore of New England and the middle States have also many Longspurs among them.

Toward spring the male becomes a beautiful bird with his black head and breast. He is the most conspicuous creature of the northern barrens when he reaches there in April. Louis A. Fuertes said after an Alaskan trip, that the Longspur sang the most beautiful song north of Bobolink-land. Edward W. Nelson has given much time to the study of the bird. "The Lapland Longspur is one of the few birds, which, like the Skylark and the Bobolink, are so filled with the ecstasy of life in spring that they must rise into the air to pour forth their joy in singing. The males are scattered here and there over the tundra on their chosen projecting points and at frequent intervals mount slowly on tremulous wings ten or fifteen yards into the air. There they pause a moment and then, with wings upointed, forming V-shaped figures, they float gently back to their perches, uttering, as they sing, their liquid notes, which fall in tinkling succession on the ear. It is an exquisite, slightly jingling melody . . . resembling the song of the Bobolink."

L. Nelson Nichols.

Courtesy of Am. Mus. Nat. Hist.

LAPLAND LONGSPUR (⅔ nat. size)

In April he is the most conspicuous creature of the northern barrens

VESPER SPARROW

Pocœcetes gramineus gramineus (*Gmelin*)

A. O. U. Number 540. See Color Plate 8.

Other Names.— Bay-winged Bunting; Grass Finch; Gray Bird; Pasture Bird; Grass Sparrow; Groundbird; Bay-winged Finch.

General Description.— Length, 6¼ inches. Upper parts, grayish-brown, streaked with black; under parts, white. Bill, small; wings, long and pointed; tail, about ¾ length of wing, forked, and with the feathers rather narrow.

Color.— ADULTS: Above, light grayish-brown (hair-brown) conspicuously streaked with black, the streaks broadest on back, less distinct on rump; lesser wing-coverts, cinnamon or russet with a dusky (mostly concealed) wedge-shaped central space; wings otherwise and tail dusky, the feathers edged with light grayish-brown, especially the larger wing-coverts and secondaries, the former (middle and greater coverts) indistinctly tipped with pale dull buffy, forming indistinct narrow bands; *outermost tail-feathers, largely white;* region over eye, light grayish brown or brownish gray, narrowly and indistinctly streaked with dusky; ear region, browner; a white or buffy white cheek stripe margined below by a series of dusky streaks along each side of throat; under parts dull white tinged with pale buffy on chest, sides, and flanks; iris, brown.

Nest and Eggs.— NEST: Always placed upon the ground, sunk level, in pastures, meadows or along roadsides in the brush; rather bulky, thick rimmed, well cupped but not tightly woven; constructed of dried grass, weed stalks, some bark strips, and lined with fine grass and hair. EGGS: 4 to 6, grayish or bluish-white spotted with burnt umber and chestnut.

Distribution.— Eastern United States and more southern British provinces; breeding from Virginia, Kentucky, Missouri, etc., northward to Nova Scotia(?), Prince Edward Island, New Brunswick(?), Province of Quebec(?), eastern Manitoba(?), etc.; south in winter to Gulf coast (Florida to eastern Texas); casual in Bermudas.

It has been said that what the Veery's song is to the deep woods, the Vesper Sparrow's is to the fields and pastures. There is a certain accuracy in this comparison, and yet the songs are essentially different in spirit; for the Veery's resonant tremolo has an elfin-like ring, which is entirely absent from the Sparrow's simple little expression of quiet thankfulness and very beautiful contentment. Both songs may be heard at any hour of the day, but there seems to be an especial sincerity and spontaneity in the Sparrow's utterance when it blends perfectly, as it always does, with the spirit of the evening and the advancing shadows. Then it is truly vesperian, and in that respect few birds have been more appropriately named.

Some listeners consider the song similar to that of the Song Sparrow, but such similarity certainly is not invariably present; and generally the songs are quite different in mood and musical structure. Mr. Torrey expressed this general difference accurately when he said that the Song Sparrow's utterance is more declamatory and the Vesper's more cantabile. Frequently the Ves-

Photograph by A. A. Allen

FOUR LAPLAND LONGSPURS AND FOUR PRAIRIE HORNED LARKS

per's lay is a simple descending series of notes, very sweet and somewhat violin-like in quality, delivered with increasing rapidity. Not infrequently the song is heard in the dead of night, and occasionally the bird delivers a quite elaborate flight-song as it flutters upward to a height of fifty or seventy-five feet. This effort is very different from the usual leisurely ditty, generally rendered from a conspicuous perch atop a fence-post or bush.

Photo by H. K. Job Courtesy of Outing Pub. Co.

NEST OF VESPER SPARROW

Containing three eggs of the Cowbird

The Vesper Sparrow is shy, after the manner of its kind. Often in the fields or on the roadsides, it will run along for some distance, keeping just ahead of the pedestrian. When it takes to its wings the two white feathers on either side of its tail show very plainly. It has no true crest, but it often elevates the feathers on the crown of its head so that they form a temporary one.

In western North America, except the Pacific coast district, there is a variant form of the Vesper Sparrow, known as the Western Vesper Sparrow (*Poœcetes gramineus confinis*). It averages larger, and has a slenderer bill than the eastern Vesper; it is also slightly paler and grayer and the marks on the chest are not so dark.

Both of these forms are replaced in the Pacific coast district by the Oregon Vesper Sparrow (*Poœcetes gramineus affinis*). The Oregon Vesper is smaller than the Vesper, browner above and distinctly buffy below.

The Vesper Sparrow lives chiefly on different injurious insects, the animal proportion of its food reaching 90 per cent. in the height of summer. Beetles and grasshoppers are most sought after, and next to them come cutworms, army worms, and other smooth caterpillars. It should be accorded the fullest protection because of its value to the farmer.

IPSWICH SPARROW

Passerculus princeps *Maynard*

A. O. U. Number 541 See Color Plate 81

General Description.— Length, 6¼ inches. Upper parts, grayish; under parts, whitish. Bill, small; wings, long and pointed; tail, about ¾ length of wing.

Color.—Adults: Above, pale grayish; the crown and back, streaked with pale brown and blackish; *crown, with a narrow center stripe of pale grayish buff or dull buffy whitish;* broad similar but paler stripe over eye; outer surface of inner wing-quills and greater wing-coverts, pale buffy brown; cheek stripe, pale buff or whitish; under parts, white tinged laterally (sometimes across chest also) with pale brownish buff; the chest and sides, streaked with brown; iris, brown.

Nest and Eggs.— Nest: On the ground in meadow and grassy reaches of Sable Island (so far as known); constructed of similar materials as the nest of the Savannah Sparrow. Eggs: Also similar but larger.

Distribution.— Breeding on Sable Island (and other islands?), off Nova Scotia; migrating southward along Atlantic coast as far as Georgia.

This is a songless Sparrow which occurs, during its migration, on the beaches along the Atlantic and Gulf coasts from Sable Island, Nova Scotia, where it breeds, to Georgia. It is most likely to be found skulking in the beach-grass, generally quite near the ocean. In such surroundings it seems to have been first discovered near Ipswich, Mass., in 1868, and thereafter for several years was confounded with Baird's Sparrow (*Ammodramus bairdi*), a western form, which it only very slightly resembles. It is very timid and when flushed is likely to fly rapidly for a considerable distance, then plunge down into the grass and continue its retreat by running for perhaps fifty yards, so that it is difficult to see the bird a second time. Its associates frequently are Horned Larks, from which it may easily be distinguished, but it somewhat resembles the larger light-colored Savannah Sparrow. Its single note, only occasionally uttered, is a faint *tzip*.

The Ipswich Sparrow is a very rare bird and this fact, added to its exceedingly limited range, prevents it from having any appreciable importance. Grass seed, particularly in winter, forms the staple diet. Lambs-quarters, different polygonums, and dock are also taken. The fruit element consists of bayberries, blueberries, and bunchberries. The animal food is made up of beetles, wasp-like insects, bugs, caterpillars, flies, spiders, and snails. In June the most common article of diet is the little dung-beetle. Tiger beetles are also eaten, a rather unusual element of Sparrow fare, but due, probably, to the abundance of these active insects upon the sand dunes which the bird frequents.

SAVANNAH SPARROW

Passerculus sandwichensis savanna (*Wilson*)

A. O. U. Number 542a See Color Plate 81

Other Names.— Ground Sparrow; Field Sparrow (incorrect); Ground-bird; Savannah Bunting.

General Description.— Length, 6 inches. Upper parts, grayish-brown; under parts, white; streaked above and below with black. Bill, small; wings, long and pointed; tail, about ¾ length of wing, and notched.

Color.— ADULTS: Above, grayish-brown, conspicuously streaked with black, the broad black streaks on back and shoulders edged with narrower dull whitish or light buffy-grayish; streaks; *crown, with a median narrow stripe of pale grayish or buffy-grayish streaks;* a broad stripe of yellowish over the eye, more decidedly yellow in the front; wings, light brownish with dusky centers to the feathers; tail, dusky grayish-brown, the feathers edged with pale grayish but without any white on inner webs; ear and under eye regions light brownish-gray or dull grayish-buffy, margined above and below by blackish streaks; a broad white or pale buffy stripe on the cheek; under parts, white (sometimes, especially in fall and winter plumage, tinged with buffy on chest and sides) with sides of throat, chest, sides, and flanks conspicuously streaked with blackish, the streaks on chest wedge-shaped, those on throat coalesced into a stripe.

Nest and Eggs.— NEST: Level with ground, generally well concealed in tall grass or tussock; a sparse collection of grass and weed stalks; lined or not. EGGS: 4 or 5, ground color varying from bluish-white to grayish-white, spotted, speckled, and blotched with brown and lavender, sometimes so thickly as to be obscured.

Distribution.— Eastern North America; breeding from Connecticut, Pennsylvania (Bradford, Crawford, Clinton, Elk, and Erie counties), Ontario, northwestern Indiana (Calumet, English, and Wolf Lakes), etc., northward to Ungava (Fort Chimo), western side of Hudson Bay, etc.; migrating south in winter to Gulf coast, Bahamas, and Cuba; casual in Bermudas.

The Aleutian Savannah Sparrow or Sandwich Sparrow (*Passerculus sandwichensis sandwichensis*) is the typical bird of this species. He breeds on Unalaska Island and in the winter comes east and south along the coast to British Columbia and occasionally to northern California. The *sandwichensis* part of his scientific name refers to his being first found on Sandwich Island in the Aleutians by a Russian. The better known member of this family, however, is the Savannah Sparrow.

The peculiarity of this otherwise rather commonplace bird is its habit of singing from the ground. This is very unusual with birds which have any song at all; for though the habit of singing from a more or less conspicuous perch is clearly an inherently dangerous one, since it must have the effect of attracting the notice of the

singer's natural enemies, it is persisted in by all but a very few American species, the law of the "survival of the fittest" to the contrary notwithstanding. In point of fact, however, the Savannah's song is a rather insignificant effort. Dr. Jonathan Dwight describes it as "a weak, musical little trill following a grasshopper-like introduction, and is of such small volume that it can be heard but a few rods." As the sun sinks and the quiet of evening deepens the *tsip-tsip-tsip se-e-e-s'r-r-r* (Dwight) is sung more frequently and is audible for a greater distance. The bird's best known note is a sharp *tsip*, frequently heard when it is migrating and still more frequently during the breeding season. This note seems to be used either to express alarm or to scold.

The Savannah is primarily a bird of the fields, especially those near the coast, and is likely to be mistaken for any of several other field Sparrows, for the Vesper, probably, more often than others; but careful study of the bird's coloration, plus its ground-singing habit, will make its identification comparatively easy.

The Savannah is one of the most useful of the Sparrows. Nearly half of its food consists of insects, beetles being most eagerly sought, and in winter it consumes large quantities of grass seeds and weed seeds. Individuals taken in cotton fields in winter were found to have eaten a number of boll weevils.

In western North America, breeding in Alaska but ranging south to Mexico, is the Western Savannah Sparrow (*Passerculus sandwichensis alaudinus*). It is about the same size as the eastern species but the coloration is decidedly paler and grayer.

Other members of this group are: Bryant's Sparrow (*Passerculus sandwichensis bryanti*), somewhat smaller and darker than the Savannah and found in the salt marshes along the coast of California; Belding's Sparrow (*Passerculus beldingi*), still darker in coloration than Bryant's and found in the salt marshes of southern and Lower California; and the Large-billed Sparrow (*Passerculus rostratus rostratus*), differing as its name suggests in the size of the bill and also in not having the upper parts conspicuously streaked; this Sparrow is also found in the salt marshes of southern California and Lower California.

GRASSHOPPER SPARROW

Ammodramus savannarum australis *Maynard*

A. O. U. Number 546 See Color Plate 81

Other Names.—Quail Sparrow; Yellow-winged Sparrow.

General Description.—Length, 4½ inches. Upper parts, gray, buff, brown, and black, mixed; under parts, whitish. Wing, short; tail, short and the feathers narrow and lance-like.

Color.—ADULTS IN SUMMER: Crown, blackish narrowly streaked with light gray or grayish buffy and divided centrally by a *distinct line of pale grayish buff*; rest of upper parts, mixed grayish, pale buffy, rusty brown, and black, the last prevailing on back and shoulders, *where forming large central or median spots;* hindneck, grayish streaked with chestnut, the chestnut streaks sometimes black centrally; feathers of rump, streaked or spotted with rusty brown, the streaks sometimes black basally; wings, dusky with distinct pale buffy grayish edgings; the lesser coverts, mostly yellowish olive passing into yellow on edge of wing; sides of head, including broad stripe over eye, dull buffy, paler and more grayish on lores, the region above lores yellowish; a dusky streak behind eye; under parts, buffy becoming white or nearly so on lower breast, abdomen, and under tail-coverts; bill, brown, paler on the edge and below; iris, brown. ADULTS IN WINTER: Similar to summer plumage, but brighter colored, with less black and more of chestnut on upper parts; the center crown-stripe, deeper buffy; the hindneck broadly streaked with chestnut; the space between the shoulders distinctly edged with buff and gray; buff of under parts deeper, that of chest sometimes indistinctly streaked with chestnut. YOUNG: Crown, dusky with an indistinct center stripe of pale grayish, and indistinctly streaked with the same, or with pale brownish; hindneck streaked with dusky and pale buffy grayish; back and shoulders, dusky or dull blackish; the feathers distinctly margined with dull buffy and pale grayish; middle and greater wing-coverts, margined terminally with dull buffy whitish; under parts, dull buffy whitish; the chest and sides of head streaked with dusky; no yellow over lores nor on edge of wing.

Nest and Eggs.—NEST: On ground or sunk level, in dry fields, clearings, or pastures, and well concealed; bulky; built of dried grass, sometimes semi-arched with deep interior. EGGS: 3 to 5, clear white, spotted and specked rather sparsely, chiefly around large end, with chestnut, black, and lilac gray.

Distribution.—Eastern United States and more southern British Provinces; west to edge of the Great Plains; north, in summer, to Maine, New Hampshire, Ontario, etc.; south, in winter, to Bahamas, Cuba, island of Cozumel, Yucatan, and Gulf coast of Mexico.

Courtesy of the New York State Museum

HENSLOW'S SPARROW
Passerherbulus henslowi henslowi (Audubon)

LECONTE'S SPARROW
Passerherbulus lecontei (Audubon)
ADULT
IMMATURE

IPSWICH SPARROW
Passerculus princeps Maynard

SHARP-TAILED SPARROW
Passerherbulus caudacutus (Gmelin)

GRASSHOPPER SPARROW
Ammodramus savannarum australis Maynard

SAVANNAH SPARROW
Passerculus sandwichensis savanna (Wilson)

SEASIDE SPARROW
Passerherbulus maritimus maritimus (Wilson)

ACADIAN SHARP-TAILED SPARROW
Passerherbulus nelsoni subvirgatus (Dwight)

NELSON'S SPARROW
Passerherbulus nelsoni nelsoni (Allen)

All ½ nat. size

It is unfortunate that this bird should ever have received the descriptive designation, "yellow-winged," since the patch of color which appears on its shoulders does not justify that description. Consequently, the absence of yellow wings is likely to mislead an observer who remembers that the bird has been so described. And this likelihood is increased by the extreme shyness of the bird, and its decided disinclination to sit still in plain view if it sees it is being observed. Under such conditions it is almost certain to dive into the nearest cover. So the observer will have to use his eyes quickly and to note accurately the comparatively inconspicuous marking of the plumage.

The insect-like, buzzing song of the bird (whence its name) is, however, quite distinctive, and can hardly be mistaken for that of any other bird of the fields. It faintly suggests the song of the Blue-winged Warbler, which, however, is essentially a bird of the woods. This Sparrow has the skulking habits of most of the members of his family who live in the fields and build their nests on the ground. Also, like other ground birds, the female, when incubating, will sit still until you are within a few feet of her, and then leave her nest very quietly and flutter along the ground, dragging her wings as if she were disabled. This is plainly an instinctive effort to attract attention to herself and away from her precious eggs. If one is determined to discover the nest, it is best to stop short immediately the bird is seen, try to locate that spot exactly, and then mark it with a handkerchief, or a stick thrust into the ground, and long enough to be conspicuous. Then by patiently walking about this spot in circles of slightly increasing diameter, examining minutely every foot of the ground (and please, "watch your step"), the pretty secret may be revealed. But it must be remembered that the nest is built of grasses which blend perfectly with the surroundings, and furthermore, that it is an almost completely enclosed structure, the entrance being at the side, so that it is exceedingly difficult to discover it unless one detects this little door, which is often itself partly concealed.

If the observer has a very sharp and trained eye, he may notice the almost imperceptible path, a few feet long, by which the Sparrow enters and leaves her little home. Knowledge of this trait is also useful if one undertakes to find the nest by watching the bird until she returns to it, which will take a deal of patience, if the little mother sees she is observed. If, however, the bird leaves her perch on a bush, or fence rail, and dives into the grass, wait a few minutes, with your gaze concentrated on that spot and then walk slowly and softly toward it and mark it. From here, by very careful scrutiny of the ground, you may be able to discern the little path, for the bird never flies directly to her nest. These suggestions have been offered, because to find a Grasshopper Sparrow's nest is a real triumph in field ornithology — one, indeed, which many a trained observer has never accomplished.

The vegetable food of the Grasshopper Sparrow is of little importance when compared with that of other species. Grain forms 2 per cent. of the food; weed seed amounts to about one-fourth. Insects form its staple diet, and of these, beetles, grasshoppers, and caterpillars are the most important. As a destroyer of insect pests the Grasshopper Sparrow is most efficient, and, both its vegetable and animal food considered, it seems to be individually the most useful species of bird whose food habits have been thus far investigated.

Courtesy of Am. Mus. Nat. Hist.

GRASSHOPPER SPARROW (¾ nat. size)

An extremely shy little bird of the fields

The typical species of the Grasshopper Sparrow family is the Antillean Grasshopper Sparrow (*Ammodramus savannarum savannarum*); it is a resident of Jamaica and Porto Rico and is similar to the Grasshopper Sparrow of eastern North America but decidedly smaller and darker. In the western United States and south over the plains of Mexico, is found the Western Grasshopper Sparrow (*Ammodramus savannarum bimaculatus*). This western species is the same size as the eastern, but of a paler coloration and with more rusty brown and less black on the upper parts.

HENSLOW'S SPARROW

Passerherbulus henslowi henslowi (*Audubon*)

A. O. U. Number 547 See Color Plate 81

Other Name.— Henslow's Bunting.

General Description.— Length, 5½ inches. Upper parts, chestnut, black, and white, mixed; under parts, whitish. Bill, stout; wing, short; tail, not longer than wing, and graduated.

Color.— ADULTS: *Head and neck, buffy olive*, the crown heavily streaked, except along center line, with black, the hindneck, more narrowly streaked; back and shoulders, chestnut, the feathers black centrally and narrowly edged or margined with whitish; wings, mainly chestnut; chin and throat, pale buff or buffy whitish; chest, sides, and flanks, deeper buffy streaked with blackish; abdomen, whitish. YOUNG: Above, dull brownish-buffy, streaked and spotted with black; beneath, light buff, the sides streaked with dusky.

Nest and Eggs.— NEST: In old clearings, pasture lands, or fresh water meadows, on the ground under a clump of grass; built of grass, lined with fine blades and some horse- or cow-hair. EGGS: 4 or 5, pale greenish or grayish white, heavily spotted and blotched with shades of brown and lavender.

Distribution.— Eastern United States, west to edge of Great Plains, north to New Hampshire, New York, Ontario, Minnesota, etc.; breeding south at least to 38°; wintering from about the same latitude to southern Florida and Texas.

Henslow's Sparrow never will be a very popular bird. It is only a plain striped Sparrow, its song is quite insignificant, its breeding home is within inaccessible wet meadows, and it is very retiring. It is really not so very rare in southern New Jersey and Maryland and across the weedy prairies of southern Indiana and Illinois. In many parts of northern Missouri and across Iowa to southern Minnesota, it is actually common. It may not be as rare as has been supposed in the northern part of its range, that is, in the northeastern States and southern Canada; but only a keen ear will notice the explosive *Che-slick* notes far off in the weeds or marsh tussocks. The song as written by P. L. Jouy is *sis-r-r-rit-srit-srit*, and this is as easily unnoticed as in that of the Grasshopper Sparrow that sings its summery lay in the hearing of thousands of people who never hear it at all, because a little distance makes the notes just the simple buzz of spring and summer. The aggressive bird student, however, who sees and hears everything, has made an acquaintance of this little brown Sparrow with its pale olive-green head.

In the winter Henslow's Sparrows are found most commonly throughout the south in the broom sedge of the dry fields. As these fields

HENSLOW'S SPARROW (⅞ nat. size)

But few bird lovers know this plain striped Sparrow

Courtesy of Am. Mus. Nat. Hist.

are neglected in winter and the Sparrows call but rarely, the people of the south know the bird even less than do the people of the north.

Because of its small numbers and irregular local distribution Henslow's Sparrow is of little economic importance. Beetles, cutworms, grasshoppers, soldier bugs, assassin bugs, spiders, blackberries, grass, and plant seeds have been found in the stomachs examined by the members of the United States Biological Survey.

There is a paler race of Henslow's Sparrows in South Dakota that is called the Western Henslow's Sparrow (*Passerherbulus henslowi occidentalis*).

On the prairie marshes of the Mississippi valley and of the central Canadian provinces, southeastward in winter, is another very similar species, known as Leconte's Sparrow (*Passerherbulus leconteí*). (See Color Plate 81.)

L. Nelson Nichols.

SHARP-TAILED SPARROW

Passerherbulus caudacutus (*Gmelin*)

A. O. U. Number 549 See Color Plate 81

General Description.—Length, 5½ inches. Upper parts, olive-brown; under parts, whitish; streaked above and below. Bill, stout; wing, short; tail, rounded, the feathers sharp-pointed.

Color.—Adults: Broad, sharply defined, and conspicuous stripe over eye and broad cheek stripe, deep buff, the latter curving upward behind the ears, but separated from the stripe on the eye by a narrow black or dark brown stripe back of the eye; ear region, grayish; crown, clear bister brown streaked with black, divided by a broad but not sharply defined center stripe of grayish; prevailing color of upper parts, olivaceous, grayer on sides of hindneck and rump, the shoulders and between decidedly darker olive-brown, sharply edged with pale grayish or buffy whitish, producing distinct streaks which are margined internally by a narrower blackish streak; *edge of wing, pale yellow*; under parts, mostly white, but the chest, sides, and flanks tinged with buff, sharply and usually conspicuously streaked with dusky. Young: Crown, blackish *divided by a narrow center stripe*, or series of streaks, of dull buffy; general color of upper parts, light buffy brownish, the shoulders and between broadly edged with buffy, *producing conspicuous streaks*; under parts, buffy, deepest on chest and sides, where streaked, narrowly, with dusky; the abdomen, sometimes nearly white.

Nest and Eggs.—Nest: Always in salt meadow grass, sometimes concealed like the Seaside Sparrow's under a bit of drift sedge; constructed of the same materials as that bird's. Eggs: 4 or 5, pale brownish or greenish white, profusely specked with chestnut.

Distribution.—Atlantic coast of United States; breeding from Massachusetts southward.

The Sharp-tailed Sparrow is a bird of the salt-water marshes along the coast of New England and New York. It has a peculiar habit of perching on a perpendicular reed stalk, where it manages, by spreading its feet wide apart, to assume a partly upright position. On the ground it runs about with its head lowered, among the tussocks, like a mouse, and it is apt to resort to this method of escaping observation, rather than to flight. A distinguishing peculiarity is the form of its tail, which is rather long, and tapers to a point, instead of being square at the end as is that of the Savannah Sparrow; hence, of course, its name. A distinctive plumage marking is the buffy line over the eye and on the sides of the throat. Its song, like that of the Seaside Sparrow, is short and unmusical.

The food habits of the Sharp-tailed Sparrow have many striking peculiarities. The bird shows a greater liking than most species for bugs, and about half of those eaten are leaf-hoppers. These are, it is true, wonderfully abundant in the moist, grassy places where this Sparrow lives, but they are not often eaten by other birds that inhabit the same kinds of places. Of the true bugs — that is, those belonging to the heteropterous division — both the smaller plant-feeding and predacious species are eaten. Perhaps the most curious feature of the bird's food habits is the liking shown for flies. These insects, mainly midges and their larvæ, certain allied insects, and the smaller adult horseflies, constitute 5 per cent. of the food, probably a larger proportion of flies than characterizes the food of any other birds except Flycatchers and those shore-inhabiting species in the Far North which feed so extensively on midges.

There is a difference in the food of the Sharp-

tailed Sparrows collected by salt water and those taken near fresh water, owing, no doubt, to differences of environment. The salt-water birds feed on the seeds of salt grasses and occasionally eat wild rice; the fresh-water birds eat other grasses. The salt-water birds eat many sand fleas which are very abundant along the beach, and the birds pick them up either on the clear sand or amid the seaweed or other shore débris. The fresh-water birds do not eat snails, while the others seem to find them very palatable. Birds collected in fresh-water marshes had fed on army worms.

Nelson's Sparrow (*Passerherbulus nelsoni nelsoni*), also known as Nelson's Finch and as Nelson's Sharp-tailed Sparrow, is decidedly smaller than the Sharp-tailed Sparrow. Its coloration is much brighter, the white, pale grayish, or pale buffy streaks of back and shoulders more sharply contrasted with the rich brown or olive ground-color. It breeds in the Mississippi valley northward and winters along the Gulf coast; occasionally it visits the Atlantic coast during migrations. (See Color Plate 81.)

More plainly colored than either the Sharp-tailed or the Nelson's is the Acadian Sharp-tailed Sparrow (*Passerherbulus nelsoni subvirgatus*) which makes its home in the salt-water marshes of the Atlantic coast of the United States and the adjacent Canadian provinces. The conspicuous lighter streaks on the back and shoulders are lacking in this member of the family or else they are not strongly contrasted with the ground color. (See Color Plate 81.)

SEASIDE SPARROW

Passerherbulus maritimus maritimus (*Wilson*)

A. O. U. Number 550 See Color Plate 81

Other Names.—Meadow Chippy; Seaside Finch.

General Description.—Length, 6 inches. Upper parts, olive-grayish, streaked; under parts, white. Bill, stout; wing, short; tail, rounded, the feathers sharp-pointed.

Color.—ADULTS: Above, olive-grayish tinged with olive especially on back, where feathers are somewhat darker with light grayish edges producing streaks; crown, olive laterally, grayish medially, producing three broad but very indistinct and faintly contrasted stripes; a stripe on the cheek, chin, throat, and abdomen, white; *stripe under the cheek and broad streaks on chest, grayish; edge of wing, yellow.* YOUNG: Above, browner than in adult, the back broadly and crown narrowly streaked with blackish; beneath, whitish; the chest, sides, and flanks buffy and streaked with dusky.

Nest and Eggs.—NEST: Placed in the areas of fine marsh grass, usually beneath dead drift patches of grass, above normal high-water mark (many nests are destroyed every year by extra high tides); constructed almost entirely of dried grass, lined with finer blades. EGGS: 4 or 5, pale greenish or pale brownish white, finely spotted all over and wreathed at large end with rufous and dull purple.

Distribution.—Atlantic coast of United States, in salt-water marshes, breeding from southern Massachusetts (Westport, near Rhode Island line) to Georgia.

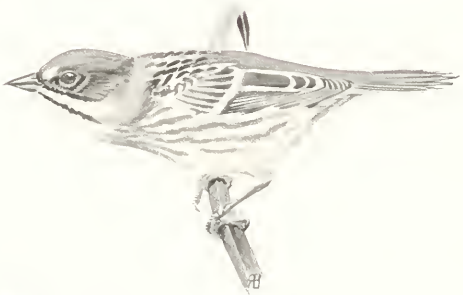
As its name indicates, the Seaside Sparrow is a land bird which, nevertheless, evidently loves the sound and the sight of the ocean, for it is most frequently found in the salt marshes along the Atlantic coast from Rhode Island southward. It often has as companions Savannah, Sharp-tailed, Swamp, or Song Sparrows from any of which it may be distinguished by its lack of the reddish cast of color, more or less of which is shown in their plumage, and by its blunt tail. Its song, of four or five notes, can hardly be considered musical; it is delivered from atop a reed, or sometimes as the bird flutters a few feet upward.

There are four varieties of the Seaside Sparrow found in different localities in the southeastern United States. Macgillivray's Seaside Sparrow (*Passerherbulus maritimus macgillivraii*) is found on the Atlantic coast from South Carolina to Florida and, in winter, along the Gulf coast; in coloration it is darker than the Seaside and its back is distinctly and often broadly streaked with black. Scott's Seaside Sparrow (*Passerherbulus maritimus peninsulæ*) is similar to Macgillivray's, but the coloration of the upper parts is more uniform, the markings being less sharply contrasted with the general color; it inhabits the west coast of Florida. The

Louisiana Seaside Sparrow or Fisher's Seaside Sparrow (*Passerherbulus maritimus fisheri*) is much darker than Macgillivray's, often the black on the upper parts exceeding the olive-gray, and the ground color of the underparts being deep buffy; it breeds on the coast of Louisiana and in winter is distributed along the coast of Texas and on the west coast of Florida. The fourth variety is the Texas Seaside Sparrow (*Passerherbulus maritimus sennetti*). As its name would indicate, it is found along the coast of Texas. It is smaller, paler, and much more buffy than the Seaside, with the shoulders and the space between distinctly darker than the rest of the upper parts.

that this species is abundant and that the region it inhabits is in no sense isolated, but that both to the north and the south there are marshes apparently similar to those it occupies, the restriction of its range to an area only a few square miles in extent makes its distribution unique among North American birds."

The food habits of the Seaside Sparrow and the Sharp-tailed Sparrow are very similar both in elements and in the proportions of the food. There are, however, some minor differences of details. Thus, the Seaside Sparrow does not take nearly so many sand fleas as its congener, but it feeds on small crabs which so far as known form no part of the food of the Sharp-



Drawing by R. I. Brasher

SEASIDE SPARROW (½ nat. size)

Closely allied to the Seaside Sparrow but constituting a different species is the Dusky Seaside Sparrow (*Passerherbulus nigrescens*). Its general coloration above is black, indistinctly streaked with olive and grayish; the wing and tail feathers are edged with olive-brown; the under parts are white thickly and broadly streaked with black; the edge of the wing and a spot above the lores are gamboge-yellow. It is found in the marshes at the northern end of the Indian River, east coast of Florida. Of this species, Dr. Chapman says: "In view of the fact

tailed Sparrow. Because of the limited distribution of these birds they probably do not come in contact to any great extent with cultivated crops. In so far as they destroy insect enemies of salt-marsh hay they are helpful, and in so far as they destroy enemies of insects which prey upon this crop, they are harmful; but otherwise they exercise little influence on agriculture. The birds do not prey on the salt-marsh caterpillars, so destructive to the hay, and they destroy a considerable amount of the seed of the marsh grasses.

LARK SPARROW

Chondestes grammacus grammacus (*Say*)

A. O. U. Number 552

Other Names.— Quail-head; Road-bird; Lark Finch; Little Meadowlark.

General Description.— Length, 6½ inches. Upper parts, brownish-gray streaked with blackish; under parts, white. Bill, stout; wings, long and pointed; tail, long and rounded; feet, small.

Color.—ADULTS: Crown and ear region, chestnut, the former with a center stripe of pale brownish-gray or grayish-buff; over eye a broad stripe of white, becoming buffy toward the rear; under eye a large white crescent-shaped spot; *under parts*, white becoming buffy grayish-brown on sides and flanks; the chest

tinged with the same and marked in center with a blackish spot; back, shoulders, lesser wing-coverts, and upper tail-coverts, brownish-gray or grayish-brown (hair-brown); the back and shoulders broadly *streaked with black*; wings (except lesser coverts), dusky with light grayish-brown edgings, the middle coverts tipped with white (producing a rather distinct band), and the eighth to fifth or fourth primaries with white at the base (producing a patch); middle pair of tail-feathers, dusky grayish-brown, the remaining feathers black, *abruptly tipped with white*, this white occupying nearly if not quite all the exposed terminal half on outermost feather; iris, brown.

Nest and Eggs.— NEST: Located usually on the ground in prairies or dry open meadows, sunk flush with the earth, carefully concealed; constructed of dried grass, weed stalks, lined with finer similar material. EGGS: 3 to 6, pure white or very pale bluish or brownish white, with spots and pen lines of sepia and black, bearing a singular resemblance to Oriole eggs.

Distribution.— Mississippi valley, east of the Great Plains; north to eastern Minnesota, Wisconsin, and southern Michigan, east (regularly) to Ohio, Kentucky, Tennessee, etc., casually or more rarely to Massachusetts, Long Island, New Jersey, Pennsylvania, District of Columbia, Virginia, etc., and (during migration) Florida.

The Lark Sparrow is one of the commonest and most attractive of American birds. It is found in grass country everywhere except in

Drawing by R. I. Brasher

LARK SPARROW (⅓ nat. size)

A familiar bird, common on both city lawns and rocky mesas

the Alleghenies and on the Atlantic coast. In the southwest there is less grass but plenty of sagebrush, and there the Lark Sparrow is also common. No one can travel through America west of the Alleghenies without seeing the Lark Sparrow. And no one who has ever known this Sparrow will ever forget how handsome he is with his chestnut and white head, one black spot on a white breast and a white-edged tail. He runs ahead along the dusty road, he rises out of the June meadows, he walks across the lawns of towns, he perches on rocks and Spanish bayonet and sagebrush and all kinds of wayside bushes. Even out upon the flat and grassless deserts he may be seen flying from cactus to cactus. His absence from the Atlantic coast States is the only fact that prevents his being one of the best known birds of America. Over his great range he is known not only for his beauty, but also for his friendly habit of nesting near the farm buildings and villages.

If nothing else made the bird a favorite, his melodious, long, and varied song, heard almost continuously, would make him beloved. It is a wonder that the poets have not sung his praises. A poetic and intelligent people love the Lark Sparrow already. The writer of poetry will praise him in verse some later year. The song is described by Ridgway as "one continued gush of sprightly music, now gay, now melodious, and then tender beyond description — the very expression of emotion. At intervals the singer falters, as if exhausted by exertion, and his voice becomes scarcely audible; but suddenly reviving in his joy it is resumed in all its vigor

Photo by I. E. Hess Courtesy of Nat. Asso. Aud. Soc.

NEST AND EGGS OF LARK SPARROW

Always carefully concealed

until he appears to be really overcome by the effort."

From the plains to the coast the Lark Sparrow is lighter colored than east of the plains. This makes a subspecies, according to the ornithologist; and the western form is named the Western Lark Sparrow (*Chondestes grammacus strigatus*). There is, however, no practical difference in the habits, song, and beauty of eastern and western birds.

It is very likely that the Lark Sparrow will extend his range eastward in much the same way as has the Prairie Horned Lark. Being a grassland bird the prairie land was the home of the bird before man broke up the eastern forests and made meadows and pastures suitable for homes for grassland birds. Man's progress into the West, creating a continuous area of grassland all the way west to the prairies, has made it possible for the prairie birds to find congenial homes further east. So as man has gone west, some of the western birds have come east.

The food of this Sparrow is made up of seeds of weeds, grasses, and grain, with about 27 per cent. of insects. It is considered to be one of the most valuable of the Sparrows as a destroyer of grasshoppers.

L. Nelson Nichols.

HARRIS'S SPARROW

Zonotrichia querula (*Nuttall*)

A. O. U. Number 553

Other Names.—Hood-crowned Sparrow; Black-hood.

General Description.—Length, 7½ inches. Upper parts, brown, streaked with blackish; under parts, white. Bill, small, compressed-conical; wings, long and pointed; tail, about the length of wing, rounded or slightly double rounded.

Color.—Adults: Crown, cheek region, chin, and throat, *uniform black*, this extended over center portion of chest in the form of a broad streaking or spotting; sides of head, dull brownish buffy becoming more grayish on sides of neck and nearly white next to the black throat-patch, relieved by an irregular blackish or dark brownish spot just back of upper rear portion of ear region; hindneck, brownish varied with blackish; upper parts, light brown or buffy hair-brown; the back and shoulders, broadly streaked with brownish black; middle and greater wing-coverts, tipped with white or buffy white, producing two distinct bands; under parts (except chin, throat, and center portion of chest), white, becoming *dull brownish buffy on sides and flanks*, where streaked with brown or dusky; iris, brown. Immature (young in first winter?): Crown with feathers black centrally, but margined with pale grayish buffy, producing a conspicuously scaly effect; throat, white, or mostly so, with black along each side; middle of chest, blotched or broadly streaked with black or dark brown.

Nest and Eggs.—Probably but one nest has been discovered.

Distribution.—Interior plains of North America, from eastern base of Rocky Mountains to western Missouri, Iowa, Minnesota, Manitoba, etc., occasionally, during migration, to Illinois, and Wisconsin; breeding west of Hudson Bay; south in winter to Texas; accidental in British Columbia and Oregon.

How modern is much of our knowledge of American birds is shown by the fact that the breeding range of the Harris's Sparrow was not known in the nineteenth century. Only the investigation of the country west of Hudson's Bay made since 1900 has established that country as the nesting home of this bird. In the United States it is distinctly a bird of the Missouri River basin, not to breed, to be sure, but to haunt for half the year the shrubbery along the river bottoms and the thickets along the smaller streams. In fact what the White-throat does when it comes down out of the North for three seasons, that also does this Black-hooded Sparrow. Black-hood and White-throat are members of the same genus, but the former has the more restricted area. Black-hood will chirp much in the same tone as the White-throat, will seldom rise much above the bushes, and haunts the damper places in the thickets to rustle about in the dead leaves.

In the spring the Black-hood's song, uttered from the same bushes as the White-throat's, begins something like the hymn-notes of the

White-throat. A change suddenly comes in the middle of the song that makes it very different from the song of any other Sparrow. The close of the song is harsh and drawling, reminding one of the distant rasp of the Nighthawk.

When the winters are severe in the lower Missouri valley, the birds push on in large numbers to central Texas, only to return, as a White-throat would, to more northern wet woods and thickets with the first sign of spring. At this season they are known as Black-hoods, and are a welcome sight in the Dakotas, where they sing their cheery songs from the topmost twigs of the scanty bushes. Their size and their colors make them as conspicuous as Towhees. But civilization loses sight of them during the breeding season and through the heat of summer.

September, though, finds them coming back over the international boundary into the upper Missouri valley. But now the hoods are inconspicuous. Most noticeable now are the heavy markings underneath and the generally reddish appearance. In this garb it is as well to name them after Mr. Harris as to call them by any other name. The birds must search far on down below the Arkansas River to find their black hoods again.

The only nest of this species known was discovered by Ernest T. Seton, August 5, 1907. Writing in *The Auk*, he describes it thus: "It was on the ground under a dwarf birch, was made of grass, and resembled the nest of the White-throated Sparrow. It contained three young, nearly ready to fly."

Figures indicate that it is advisable to afford this species all possible encouragement and protection. The report of the United States Biological Survey was based on the examination of 100 stomachs. As is the case with many of the birds that breed for the most part to the north and merely winter in the United States, the stomach contents were mostly vegetable in character, the animal matter amounting to but 8 per cent. The animal matter was made up of about the same kinds of insects, spiders, and snails that enter into the fare of other Sparrows, but the quantity of leaf hoppers was unusually large (2 per cent. of the food).

Of the vegetable food, 25 per cent. was made up of the seeds of wild fruits and of various plants of uncertain economic position; 10 per cent. of grain, which included more corn than wheat and oats; 9 per cent. of grass seed, mainly pigeon grass, crab grass, June grass, and Johnson grass; 6 per cent. of the seeds of amaranth, lamb's-quarters, wild sunflower, and gromwell, and 42 per cent. of ragweed and polygonum.

Drawing by R. I. Brasher

HARRIS'S SPARROW (¾ nat. size)

A comparatively little known bird whose nest was not discovered until 1907

WHITE-CROWNED SPARROW

Zonotrichia leucophrys leucophrys (*J. R. Forster*)

A. O. U. Number 754. See Color Plate 82.

Other Name.— White-crown.

General Description.— Length, 6¾ inches. Plumage, gray, light below, and dark with streaks of brown above. **Bill,** small, compressed-conical; wings, long and pointed; tail, about the length of wing, rounded or slightly double rounded.

Color.—ADULTS: Crown, with *two broad lateral bands of deep black, inclosing a center one of white* or grayish white of approximately equal width; black of forehead extending backward to the front angle of the eye; a white or grayish-white stripe over eye extending forward above the eye nearly or quite as far as its front angle; hindneck, sides of neck, and ear region, plain gray; back and shoulders, light gray or brownish-gray broadly streaked with chestnut-brown or vandyke-brown; rump and upper tail-coverts plain hair-brown; tail, dark hair-brown with paler edgings; middle and greater wing-coverts, dusky grayish-brown, edged with pale hair-brown and tipped with white, forming two distinct bands; inner wing-quills dusky, margined terminally with whitish, this passing into chestnut-brown toward basal portion of outer webs; primaries, dusky hair-brown narrowly edged with paler; sides of head and neck and chest uniform rather light gray, fading into nearly white on throat, chin, and abdomen; sides and flanks, pale buffy-brown; the under tail-coverts pale buffy or buffy-whitish; iris, brown.

Nest and Eggs.— NEST: Commonly placed on the ground, in dry, high mountain meadows or clearings, sometimes in low bushes; constructed of small twigs, grasses and rootlets, lined with fine grass and hair. EGGS: 3 to 5, pale greenish blue to dull pale brownish white, specked and spotted with chestnut, heaviest at large end.

Distribution. More eastern British provinces and greater part of United States; breeding from Vermont, Province of Quebec, northeastern Minnesota (?), etc., northward to west side of Hudson Bay and over peninsula of Labrador to southern Greenland, and throughout the high mountain districts of the western United States, from the main Rocky Mountain ranges to the Sierra Nevada, including the intermediate Uinta and Wasatch ranges; breeding southward to New Mexico and Arizona, northward to northern California; migrating southward over greater part of eastern United States, over Mexican plateau and throughout peninsula of Lower California.

Drawing by R. I. Brasher

WHITE-CROWNED SPARROW (⅔ nat. size)

His song has a singular sweetness, all its own

By careless observers this Sparrow is often mistaken for the White-throat, though the difference in the coloration of the two is very marked. In the first place, the White-crown lacks entirely the yellow patch before the eye, the white stripe over the eye, and white patch on the throat, all of which are conspicuous markings of the White-throat's plumage. Then, too, the White-throat's head is much more nearly flat on the crown than is the White-crown's, which is distinctly dome-shaped. On the other hand, White-crowns and White-throats frequently associate, and feed together, and their manners are not unlike.

There is, however, little similarity in the songs of the birds, and the White-throat's will be considered the better of the two probably by most listeners. This is by no means intended to disparage the effort of the White-crowned minstrel, which has a singular sweetness and effectiveness all its own. Indeed, Mr. Burroughs considers the White-crown "a vastly finer songster than the White-throat." As described by Mr. Mathews, "it is composed of six, or at the most, seven notes (unless it is doubled); the first one is twice as long as the others which are of about even value. The intervals are fairly accurate and include anything from a third to a fifth; all the notes are clearly whistled except (generally) the two next to the last, and these are distinctly double-toned or burred; the whole is marked by an even crescendo to the highest note, which is next to or within one of the last, or sometimes actually the last." The song has something, though rather less, of the plaintive quality which characterizes that of the White-throat, and like that bird's is also often heard at night.

In western North America there are two varieties of the White-crowned Sparrow. Gambel's Sparrow (*Zonotrichia leucophrys gambeli*) and Nuttall's Sparrow (*Zonotrichia leucophrys nuttalli*). Gambel's Sparrow averages a trifle smaller than the White-crowned; its coloration is similar, but the lores is entirely white, thus making the light-colored stripe over the eye continuous to the bill. Nuttall's Sparrow also has this uninterrupted stripe, but its general coloration is much darker and its size smaller than Gambel's Sparrow. Gambel's Sparrow is not found in the Pacific coast district of the United States while that is the home-land of Nuttall's Sparrow.

Like most of the family these birds are seed-eaters by preference, and insects comprise very little more than 7 per cent. of their diet. Caterpillars are the largest item, with some beetles, a few ants and wasps, and some bugs, among which are black-olive scales. The great bulk of the food, however, consists of weed seeds, which amount to 74 per cent. of the whole. In California these birds have been accused of eating the buds and blossoms of fruit trees, but buds or blossoms were found in only thirty out of 516 stomachs, and probably it is only under exceptional circumstances that they do any damage in this way. Evidently neither the farmer nor the fruit grower has much to fear from White-crowned Sparrows. The little fruit they eat is mostly wild, and the grain eaten is waste or volunteer.

GOLDEN-CROWNED SPARROW

Zonotrichia coronata (*Pallas*)

A. O. U. Number 557

Other Name.— Golden-crown.

General Description.— Length, 6¾ inches. Plumage, gray, light below, and dark with streaks of brown above. Bill, small, compressed-conical; wings, long and pointed; tail, about the length of wing, rounded or slightly double rounded.

Color.— Adult Male: Crown, deep black, divided medially by a broad *stripe of olive-yellow*, changing rather abruptly to light gray on back of head; upper parts, grayish olive-brown, the back and shoulders broadly streaked with brownish black, these streaks with a marginal suffusion of chestnut-brown; outer webs of innermost greater wing-coverts and inner wing-quills inclining to chestnut-brown; middle and greater coverts, tipped with white, forming two distinct bands; sides of head, dull grayish; under parts, dull brownish gray, somewhat paler on chin and throat, nearly white on abdomen, light buffy brownish color on sides and flanks; under tail-coverts, light grayish-brown or drab, broadly margined with pale buffy; iris, brown. Adult Female: Similar to the male, sometimes hardly distinguishable, but usually with the lateral black stripes of the crown narrower and less intensely black, the yellow of the crown-spot rather paler, and the gray of back of head streaked with dusky. Immature (Young in First Winter?): Similar to adult female, but without any lateral black stripe on crown or well-defined center stripe, the whole forehead and front portion of

WHITE-THROATED SPARROW
Zonotrichia albicollis (Gmelin)

WHITE-CROWNED SPARROW
Zonotrichia leucophrys leucophrys (J. R. Forster)
ADULT

VESPER SPARROW
Pooecetes gramineus gramineus (Gmelin)

IMMATURE
SLATE-COLORED JUNCO
Junco hyemalis hyemalis (Linnaeus)
MALE FEMALE

All ⅔ nat. size

crown yellowish olive, more or less flecked with dusky, the back portion of the crown, light grayish-olive-brown, streaked with dusky.

Nest and Eggs.— NEST: In alder thickets of Alaska streams; constructed of coarse grass, weed stems, rootlets; lined with fine grass; quite large, and loosely built. EGGS: 4 or 5, pale greenish blue, distinctly speckled with shades of brown and chestnut.

Distribution.— Pacific coast and Bering Sea districts of North America; breeding on the Shumagin Islands, Alaska Peninsula, Kodiak, and more western parts of the Alaskan mainland; migrating southward in winter through southern Alaska, British Columbia, Washington, Oregon, and California, to the San Pedro Martir Mountains, Lower California, the Santa Barbara Islands; occasional straggler eastward.

Alaska is the home of the Golden-crowned Sparrows. They nest during the month of June. After the breeding season, the Golden-crowns are somewhat erratic in their movements. Some stay in the North for a while; others begin straggling off for the South, either alone or in small flocks. As a rule, the Golden-crowns join with the White-crowned Sparrows. Our acquaintanceship with the Golden-crowns begins late in the fall when we see a small flock in the shrubbery and hedgerows through California. It is easy to make friends with these Sparrows by scattering a few crumbs along the paths.

As far as I have observed, the Golden-crowns do not sing much when traveling. I see them each fall on their way through Oregon, but they are silent. I knew the bird best about the campus of the University of California at Berkeley and in Golden Gate Park at San Francisco.

His mood is different from that of other birds. It isn't the sun that makes him joyous; it is the rain. Perhaps the lack of moisture in the California climate makes him homesick. When a rain does come, it reminds him so much of the mist and showers of his northern home that he cannot help breaking into song. The song of the Golden-crown, therefore, is always associated in my mind with a drizzling rain. It is a simple, mournful lay in a high key, quite quavering at times. It is a minor strain, each note lowered a half step.

In his last book, *Field Days in California*, Bradford Torrey speaks of meeting the Golden-crowned Sparrow at Paso Robles. "I was soon close upon a flock of Golden-crowned Sparrows. They were no novelty. I had seen many like them. But these were in song; and that was a novelty; a brief and simple tune, making me think of the opening notes of the eastern White-throat, but stopping short of that bird's rollicking triplets, ending almost before it began, as if it had been broken off in the middle, with a sweetly plaintive cadence. Like the White-throat's, and unlike the White-crown's, the tone is a pure whistle, so that the strain can be imitated, even at first hearing, well enough to excite the birds to its repetition. I proved it on the spot." WILLIAM L. FINLEY.

For the determination of the food of the Golden-crowned Sparrow, 184 stomachs were available. The animal food amounted to 0.9 per cent., vegetable to 99.1 per cent. The animal food consisted of insects and was pretty well distributed among the various orders. It was evident that the Golden-crowned does not search for insects and takes only those that come in its way. The vegetable food consists of fruits, buds and flowers, grain, and some miscellaneous matter. Fruit amounted to a little more than 1 per cent. of the food and consisted of elderberries, grapes and what was thought to be apple. Buds and flowers averaged 20.5 per cent., grain nearly 26 per cent., and weed seed 33 per cent. This bird does no direct harm to fruit, but by the destruction of buds and blossoms it may do serious harm where it is numerous and visits the orchards.

WHITE-THROATED SPARROW

Zonotrichia albicollis (*Gmelin*)

A. O. U. Number 558 See Color Plate 82

Other Names.— Peabody Bird; Cherrybird (in Adirondacks); Canada Bird; White-throated Crown Sparrow; White-throat; Nightingale (in Manitoba); Canada Sparrow; Peverly Bird.

General Description.— Length, 7¼ inches. Upper parts, rusty-brown, streaked with black; under parts, white and gray. Bill, small, compressed-conical; wings, long and pointed; tail, about length of wing, rounded or slightly double rounded.

Color.—ADULT: Crown, black divided centrally by

a line or narrow stripe of white; a broad stripe over eye, *bright yellow anteriorly (from bill to above eyes)*, white posteriorly; a broad streak of black behind eye; ear and under eye regions, plain gray; *a conspicuous white patch covering chin, upper throat, and greater part of cheek region;* this white patch abruptly defined below against the gray of lower throat and chest, which passes into a more brownish hue on sides and flanks, the latter streaked with grayish-brown; breast, abdomen, and under tail-coverts, white; back and shoulders, rusty-brown streaked with black; rump and upper tail-coverts, light olive or hair-brown; tail, deeper hair-brown edged with paler; middle and greater wing-coverts, tipped with whitish forming two narrow bands; primaries, primary coverts, and outermost greater coverts, edged with lighter and more grayish-brown; the edge of wing, pale yellow; iris, brown.

Nest and Eggs.— NEST: Typical site on ground, in burnt-over clearings of coniferous forests; sometimes in low bushes near streams or borders of fresh-water swamps, in the evergreen woods; a rather bulky structure, of coarse grasses, strips of bark, moss, lined with fine blades of grass. EGGS: 4 or 5, minutely and evenly sprinkled or heavily blotched with dark brown on a pale greenish or pale buffy ground.

Distribution.— Eastern North America; breeding from Massachusetts, northern New York, Ontario, northern Michigan, northeastern Wyoming, eastern Montana, etc., northward to Great Bear Lake, west shores of Hudson Bay, Labrador, etc.; south in winter to Florida and southern Texas

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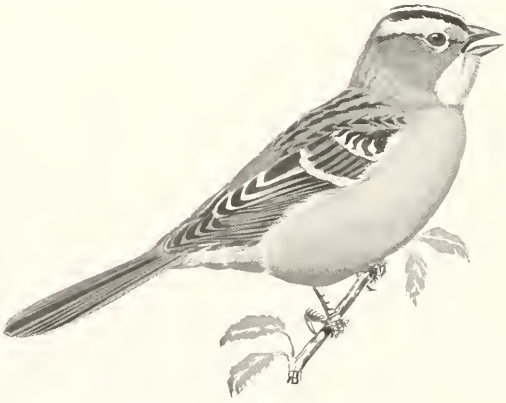
This is not only one of the handsomest of the Sparrows; it is perhaps the sweetest singer of them all. The pity of it is that comparatively little is seen or heard of him by humans who would be glad to know him better; for he shows his fetching black, white, and yellow-striped cap, his white ascot tie and his warm brown jacket, and sings his beautiful little song, only on his way to and from his breeding ground in the Canadian forests. This at least is true of the great majority of White-throats, though many breed in northern New York, Maine and in the New England mountains as far south as northern Massachusetts. Both in spring and in fall the birds are likely to travel in little flocks and to spend much of their time on the ground, where they scratch vigorously like Towhees and Juncos. In this operation a White-throat creates a commotion in the dry leaves which suggests the presence of a bird or animal many times its size.

There are few bird utterances at once more characteristic and more appealing than the finished song of this Sparrow. Various efforts have been made to represent the song in words, but all of these attempts are more or less unsatisfactory, for the very good and sufficient reason that they fail utterly to express the spirit of the utterance. "Old Sam Peabody, Peabody, Peabody" is the common New England rendition, from which is derived the popular name of "Peabody Bird," but as W. Leon Dawson, the Ohio orni-



Drawing by R. I. Brasher

WHITE-THROATED SPARROW (½ nat. size)

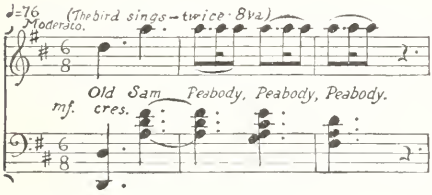
A shy singer whose wistful, plaintive theme is one of the perfect expressions of the bird world

thologist, says, "the bird does not utter anything remotely resembling Peabody while in Ohio," nor anywhere else, he might have made bold to add.

From a New England farmer, Bradford Torrey had the following story of the origin of another effort to put the song into words:

"A farmer named Peverly was walking about his fields one spring morning, trying to make up his mind whether the time had come to put in his wheat. The question was important, and he was still in a deep quandary, when a bird spoke up out of the wood and said, 'Sow wheat, Peverly, Peverly, Peverly!' That settled the matter. The wheat was sown and in the fall a most abundant harvest was gathered; and ever since then this little feathered oracle has been known as the Peverly bird." (*Birds in the Bush*).

The fault with all of these attempted transliterations, as has been said, is that they quite fail to convey the real genius of the song. Its two commoner forms are reduced to musical notation by Mr. Mathews as follows:



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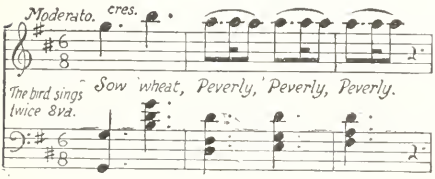


The piano conveys only a very faint suggestion of the truly ethereal quality with which the singer invests this simple little phrase. Played with a very skillfully executed tremolo effect well up on the E string of a fine violin, the notes convey a somewhat more definite idea of the song, though the bird's tone is not that of the violin. Essentially the song is a lament — a lament which is wistful and ineffably plaintive, but in which there is no despair, only sweet hopefulness. Stewart Edward White in his book, *The Forest*, has a singularly faithful appreciation of this quality in the song. Ascending from jest to eloquent earnest, he writes:

"The White-throated Sparrow sings nine different variations of the same song. He may sing more, but that is all I have counted. . . . One man I knew he nearly drove crazy. To that man he was always saying, 'And he never heard the man say drink and the ——.' Toward the last my friend used wildly to offer a thousand dollars if he would, if he only would, finish that sentence.

"But occasionally, in just the proper circumstances, he forgets his stump corners, his vines, his jolly sunlight, and his delightful bugs to become an intimate voice of the wilds. It is night, very still, very dark. The subdued murmur of the forest ebbs and flows with the voices of the furtive folk, an undertone fearful to break the night calm. Suddenly across the dusk of silence flashes a single thread of silver, vibrating, trembling with some unguessed ecstasy of emotion. 'Ah! poor Canada, Canada, Canada' it mourns passionately, and falls silent. That is all."

GEORGE GLADDEN.

Like many of the members of its family, this Sparrow is a great destroyer of weed seed and has an especial fondness for the seeds of the ragweed and birdweed. It consumes, also, a great many wild berries and a goodly number of insects. Its food habits in general place it among the useful birds of the farm.

TREE SPARROW

Spizella monticola monticola (*Gmelin*)

A. O. U. Number 559 See Color Plate 80

Other Names.—Snow Chippy; Winter Chip-bird; Winter Chippy; Tree Bunting; Canada Sparrow; Arctic Chipper; Winter Sparrow.

General Description.—Length, 5¾ inches. Upper parts, gray, rusty, and black, streaked; under parts, gray. Bill, small; wings, rather long and rather pointed; tail, shorter than wing, forked or double rounded, the feathers narrow and blunt.

Color.—ADULT: Crown, streak behind eye, and patch on sides of chest, brownish; hindneck, sides of head and neck (except as described), and broad stripe over eye, light gray; chin and throat, similar but paler; breast, abdomen, and under tail-coverts, dull white, the first with a dusky center spot or blotch at upper edge, next to the pale grayish of the chest; sides and flanks, pale wood brownish or brownish buffy; back and shoulders, pale grayish buffy broadly streaked with black and, more narrowly, with rusty; rump and upper tail-coverts, plain hair-brown; tail, grayish dusky, the feathers conspicuously edged with pale gray or buffy gray; greater wing-coverts, broadly edged with rufous, dusky centrally; middle and greater *wing-coverts*, dusky, *tipped with white, forming two distinct bands;* iris, brown. YOUNG: Crown, dull brown streaked with blackish; rump, pale buffy grayish indistinctly streaked or mottled with dusky; under parts, whitish tinged with buffy on chest; the sides of throat, chest, breast, and front portion of sides, streaked with dusky; otherwise essentially like adults.

Nest and Eggs.—NEST: Located in low trees, bushes or on ground; constructed principally of dried grass, strips of bark, moss, weed stems, and warmly lined with feathers. EGGS: 3 to 5, pale greenish blue, specked minutely and regularly over entire surface with rufous brown.

Distribution.—Eastern North America, breeding in Newfoundland, Labrador, and region about Hudson Bay (limits of breeding range very imperfectly known); south in winter to South Carolina, Tennessee, Oklahoma, etc.

The word "tree" is misleading as applied to the Tree Sparrow; for the bird is most frequently found on the ground, and does not even nest in trees ordinarily. This is only one of very many instances of strange inaccuracy in popular nomenclature. The vernacular names "Arctic Chipper" and "Winter Chip-bird" are, however, justified by the facts that the bird breeds in the northland, and passes the winter months in the temperate zone. Indeed, the Tree Sparrow and the Slate-colored Junco are the only native members of the Sparrow family which may fairly be counted winter residents within the United States. This, of course, excludes the English Sparrow, "which does not deserve to be considered as a bird, but rather as a feathered rat," as Mr. Job says. The Tree Sparrow has the further distinction of being one of the few American birds who sing real songs in real winter weather, for its pleasing little Canary-like ditty of tinkling notes is often heard in February when there is both snow and blow aplenty.

Photo by H. K. Job Courtesy of Outing Pub. Co

TREE SPARROW

Feeding on window-sill

The Western Tree Sparrow (*Spizella monticola ochracea*) has decidedly longer wings and tail than the eastern species and its coloration is paler. It breeds from the valley of the Anderson River, near the Arctic coast, westward through Alaska and southward for an undetermined distance. In the winter it comes south through western North America to Arizona, Utah, Colorado, and Texas.

One-fourth ounce of weed seed per day is a conservative estimate of the food of an adult Tree Sparrow. On this basis, in a large agricul-

tural state like Iowa, Tree Sparrows annually eat approximately 875 tons of weed seeds. Only the farmer, upon whose shoulders falls the heavy burden of freeing his land of noxious weeds, can realize what this vast consumption of weed seeds means in the saving and cost of labor. Dr. Judd reports an interesting illustration of the Tree Sparrow's habits which was noticed during a heavy snowstorm in the third week of February. Here and there, where the whiteness of the field was pierced by phalanxes of dry broom-sedge, a flock of a dozen or more Tree Sparrows found good cheer in spite of driving flakes. From one brown patch to another they flew, clinging to the plants while they plucked out the seeds, seldom leaving a stalk unexplored. Frequently two would feed from a single stalk, while a third, made thrifty by the wintry dearth, hopped in the snow below searching for scattered seeds. The snow whirled in clouds across the field, but these little creatures worked on with cheerful, hardy industry.

CHIPPING SPARROW

Spizella passerina passerina (*Bechstein*)

A. O. U. Number 500 See Color Plate 8

Other Names.—Chip-bird; Chippy; Hair-bird; Social Sparrow; Hair Sparrow; Little House Sparrow.

General Description.—Length, 5½ inches. Upper parts, gray, rusty, and black, streaked; under parts, gray. Bill, small; wings, rather long and rather pointed; tail, shorter than wing, deeply forked, the feathers narrow and blunt.

Color.—ADULT MALE: *Crown, deep cinnamon-rufous to rufous-chestnut*; the forehead, black divided by a center streak of whitish; a broad stripe of white or very pale gray over eye margined below by a *conspicuous streak of black*, the latter extending beyond the ears; ear and under eye regions, sides of neck, and hindneck, gray, the last streaked with blackish; back and shoulders, light brown or drab broadly streaked with black, the black streaks edged with rusty-brown; rump and upper tail coverts, deep olive-gray or mouse-gray, the latter somewhat darker centrally; tail, dusky, the feathers edged with light gray; lesser wing-coverts, mouse-gray with darker centers; middle coverts, dusky broadly margined terminally with white or buffy forming a band; greater coverts, dusky edged with pale wood-brown or buffy-brown, usually passing into whitish or pale buffy at tips of feathers; inner wing-quills, dusky broadly edged with wood-brown or pale buffy brown; primaries, dusky narrowly edged with pale grayish; under parts, white or grayish-white; the chest, sides and flanks shaded with pale gray; iris, brown. ADULT FEMALE: Similar to the male and frequently not distinguishable, but usually (?) with the rufous crown slightly less extended and often streaked with dusky. Winter adults have the colors duller, the markings less sharply contrasted, the gray less pure, the chestnut crown obscured by buffy tips to the feathers.

Nest and Eggs.—NEST: Built in bushes, hedges, or almost any kind of tree, especially cedars, usually close to houses, the orchard being a favorite locality; a delicate, open-work structure of fine, curly rootlets, cleverly interwoven and always thickly lined with horse-hair, sometimes constructed almost entirely of this material. EGGS: 3 or 4, rarely 5, bluish-green, thinly spotted with blackish brown, often wreathed at large end.

Distribution.—Eastern United States and British provinces, west to the Great Plains; breeding from near the Gulf coast northward to Nova Scotia, New Brunswick, Prince Edward Island, Province of Quebec, and wooded region on eastern side of the Saskatchewan plains; wintering chiefly in the more southern United States (Florida to Eastern Texas and northward); casual winter visitant to Cuba (and eastern Mexico?).

Drawing by R. I. Brasher

CHIPPING SPARROW (½ nat. size)

This is the familiar and friendly "Chippy" of the dooryard and roadside

This Sparrow is one of the best known and most loved of our door-yard birds. Its confidence in the friendliness of man seems to be no less than that of the Robin and Bluebird, whence one of its names, the Social Sparrow. Another popular name, "Hair-bird," refers to the bird's

fondness for horse-hairs as material for its nest. As a matter of fact, this is not good nesting-material, for, the hairs selected are from the mane and tail of the horse, and besides being stiff, and therefore hard to weave into the only

Photo by H. T. Middleton

CHIPPING SPARROW

One of the tamest of our door-yard birds

kind of nest the bird knows how to build, are often so long that two or three ends are likely to be left protruding for several inches. These ends are dangerous snares, in which both old and young birds become entangled, often with tragic results. The persistence of the bird in using this dangerous building material is but another illustration of the blind way in which instinct sometimes works.

The song of this Sparrow is a rapid and rather monotonous reiteration of the same note. It is frequently described as a "trill," but this is inaccurate, as a trill is a rapid repetition of two distinct tones, whereas there is but one tone in Chippy's song. Mr. Burroughs records, as a marked exception, a song of one of these Sparrows in which the tones were in two groups, one at a little lower pitch than the other. The tone is very high,— an octave or so above the highest C of a piano. The bird is often in a conspicuous place — the top of a tree or bush — as he presents this simple little offering; or he may even execute part of it while on the wing, though this seems to be very unusual.

Inexperienced or careless observers frequently confuse this Sparrow with the Field Sparrow; but this is needless if one will remember that the Chipping Sparrow has a *black bill*, and a *grayish line* over the eye and a brown stripe through it, distinguishing marks which the Field Sparrow lacks.

The Chipping Sparrow is one of the most insectivorous of all the Sparrows. Its diet consists of about 42 per cent. of insects and spiders and 58 per cent. of vegetable matter. The animal food consists largely of caterpillars, of which it feeds a great many to its young. Besides these, it eats beetles, including many weevils. It also eats ants, wasps, and bugs. Among the latter are plant lice and black-olive scales. The vegetable food is practically all weed seed. A nest with four young of this species was watched at different hours on four days. In the seven hours of observation 119 feedings were noted, or an average of seventeen feedings per hour, or four and one-quarter feedings per hour to each nestling. This would give for a day of fourteen hours at least 238 insects eaten by the brood. Chipping Sparrows have been noted at the end of May far out in a patch of corn stubble feeding on yellow sorrel that was going to seed. A score of Chipping Sparrows have been seen amid crab grass, which was spreading so rapidly through a market garden in a pear orchard that it was likely to impair the product. They hopped up to the fruiting stalks, which were then in the milk, and beginning at the tip of one of the several spikes that radiated from

Photo by H. K. Job Courtesy of Outing Pub. Co.

CHIPPING SPARROW AT HOME

On Mr. Job's porch, in the woodbine

a common center like the spokes of a wheel and, gradually moving their beaks along to the base, they chewed off the seeds of spike after spike in regular succession. Usually they did not remove their beaks until they reached the base, though

FIELD SPARROW *Spizella pusilla pusilla* (Wilson)
IMMATURE MALE

CHIPPING SPARROW *Spizella passerina passerina* (Bechstein)
IMMATURE MALE

FOX SPARROW *Passerella iliaca iliaca* (Merrem)

All ⅔ nat. size

some individuals, especially birds of the year, would munch a few seeds in the middle of a spike and then take a fresh one.

Decidedly larger but paler in coloration is the Western Chipping Sparrow (*Spizella passerina arizonae*). It is found generally over western North America from the Rocky Mountains to the Pacific coast, including Alaska and the more western parts of the interior districts of British America.

The Clay-colored Sparrow (*Spizella pallida*) very much resembles an immature Chippy. It is found on the great plains of North America from the eastern base of the Rocky Mountains to the prairie districts of the upper Mississippi valley. Its nest is usually near the ground like the Field Sparrow's.

Another closely allied species is Brewer's Sparrow (*Spizella breweri*), locally known in its range in the United States west of the Rocky Mountains and south into Mexico as the Sage Chippy. It averages a trifle smaller than the Clay-colored Sparrow, to which it is similar, but it is more narrowly and uniformly streaked above, especially on the crown which lacks the central stripe.

FIELD SPARROW

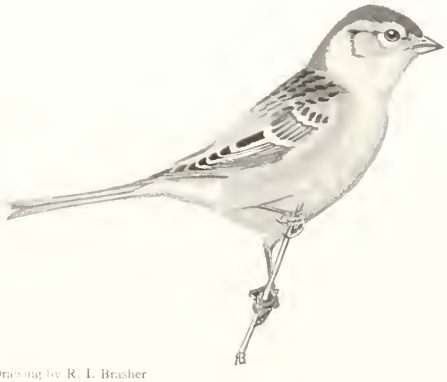
Spizella pusilla pusilla (*Wilson*)

A. O. U. Number 6; See Color Plate 83

Other Names.—Bush Sparrow; Rush Sparrow; Huckleberry-bird; Wood Sparrow; Field Chippy; Ground-bird; Ground Sparrow; Field Bunting.

General Description. Length, 5¾ inches. Upper parts, gray, rusty, and black, streaked; under parts, gray. Bill, small; wings, rather long and rather pointed; tail, nearly length of wing, forked or double rounded, the feathers narrow and blunt.

Color.—Adults: Crown, rusty brown; sides of head, light gray (smoke-gray or olive-gray) relieved by a rusty brown streak behind eye; back and shoulders, rusty brown narrowly streaked with black, often streaked also (on edges of feathers) with light dull buffy or clay color; rump and upper tail-coverts, light brown or hair-brown; tail, deep hair-brown, the feathers edged with pale grayish; larger wing-coverts and inner wing-quills, dusky centrally; middle and greater coverts, tipped with whitish, forming two bands; the greater coverts edged with pale brown; outer web of inner wing-quills, broadly edged with pale rusty brown or cinnamon; under parts, pale grayish buffy toward the front and sides, the buffy tinge most pronounced on chest, fading into dull white on each side of chest. Young: Much duller in color than adults, with the chest and sides streaked with dusky; crown, dull brown (not rusty), usually (?) narrowly and indistinctly streaked with dusky; otherwise essentially like adults.



Drawing by R. I. Brasher

FIELD SPARROW (⅔ nat. size)

A tinkling musician of the open fields

Nest and Eggs.— NEST: Usually placed in low thick bushes, or in tufts of grass on the ground, in clearings, or bushy fields, near woodland; constructed of coarse grass, weed strips, and rootlets, lined with finer grasses and hair. EGGS: 3 to 5, grayish or bluish white spotted with various shades of brown, more heavily around large end.

Distribution.— Eastern North America, west to the edge of the Great Plains; breeding from upper Georgia and South Carolina, northwestern Florida, central Alabama, and Mississippi, and central Texas, northward to Maine, Ontario, Manitoba; wintering in more southern United States, from Florida to Texas, northward to about 39°, occasionally farther.

The Field Sparrow, Chipping Sparrow, and Tree Sparrow resemble one another nearly enough to perplex the inexperienced or hasty observer. Sharp eyes, intelligently used, however, will reveal certain characteristic marks. Look for the *reddish bill* and the *plain breast* of the Field Sparrow; the *white stripe* over each eye, the almost pure *white breast* and the *gray rump* of the Chippy, and the *dark spot* in the middle of the breast of the Tree Sparrow.

The popular specific term "field," is a little misleading as applied to this bird, for its favorite habitat is an old pasture-lot overgrown with weeds and high bushes, or undergrowth along

Photo by S. A. Lottridge

NEST AND EGGS OF FIELD SPARROW

the edges of woodland, rather than cultivated fields, in which it is rarely seen. Nor does it appear, except by accident, in dooryards of human habitations.

This Sparrow's habits of running along the ground and skulking through the brush are characteristics which aid in its indentification, and which at the same time reveal its retiring and timid disposition. Its song is a simple but musical little ditty of which Thoreau says: "The Rush Sparrow [a local name for the bird in his time, and one still sometimes used] jingles her small change, pure silver, on the counter of the pastures," a fetching description, though it implies a curious ignorance of the fact that it is the male bird that does the singing. The song is not unlike that of the Chipping Sparrow, in that its notes are all of the same pitch, but it is distinctive in that their delivery is at an accelerated rate which effectually relieves the effect of monotony. The tone is pure and sweet, rather more so than that of the "Chippy." Bradford Torrey recorded that he once heard the song rendered "in reverse order," with an effect which puzzled him until he had identified the singer. This observation conveys a valuable hint as to the variability in the songs of birds. It should always be borne in mind that this variability may be marked even in birds of the same species and the same locality; indeed it is likely that two birds from the same brood may render perceptibly different versions of the same song.

The laboratory investigation of 175 specimens of the Field Sparrow collected during all the months of the year from fifteen States and the District of Columbia showed 41 per cent. animal material and 59 per cent. vegetable. The animal matter consisted of weevils, leaf beetles, ground beetles, tiger beetles, click beetles, May beetles, caterpillars, grasshoppers, leaf-hoppers, true bugs, saw flies, ants, flies, spiders, and parasitic wasps. The last item is the principal point wherein the Field Sparrow differs in its food habits from the Chipping Sparrow — a difference that is not to the credit of this species from the standpoint of usefulness, since these wasps have been proved to be dangerous parasites of many caterpillars. Of the vegetable food 51 per cent. was seeds of grasses of such species as crab-grass, pigeon-grass, broom-sedge, poverty-grass, and sheathed rush-grass; 4 per cent. was seeds of such weeds as chickweed, lamb's-quarters, gromwell, spurge, wood sorrel, and knot-weed; and 4 per cent. was oats. Dr. Judd tells in his *Birds of a Maryland Farm* of watching a flock of Field Sparrows in the middle of November. They spent most of their time swaying on broom-sedge stalks, from which they were busily extracting seeds. Sometimes a bird alighting on a plant would bend it to the ground and hold it down with its feet while picking out the seeds; seldom would one feed from the ground in any other way.

The Western Field Sparrow (*Spizella pusilla*

arenacea) has much longer wings and tail, especially the latter, than his eastern relative, and his general color is grayer. He is found in the more western portions of the Great Plains; he breeds from Nebraska and South Dakota to eastern Montana and winters south to southern Texas and Louisiana.

Worthen's Sparrow or the Mexican Field Sparrow (*Spizella wortheni*) is a straggler from over the Mexican border into New Mexico. He is much like the Western Field Sparrow but his tail is much shorter, the wing-bands less distinct, and the sides of the head gray, relieved only by a white eye-ring.

BLACK-CHINNED SPARROW

Spizella atrogularis (*Cabanis*)

A. O. U. Number 505

General Description.— Length, 5¼ inches. Upper parts, rusty-brown streaked with black; under parts, black, gray, and white. Bill, small; wings, rather long and rather pointed; tail, decidedly longer than wing, double rounded, the feathers narrow and blunt.

Color.— ADULT MALE: *Front portion of cheek region, chin, and part of throat, black;* rest of head and neck, gray, darker on crown, where sometimes narrowly and indistinctly streaked with dusky, fading into lighter gray or olive-gray on chest and other under parts; the abdomen, white; *back, light rusty-brown* or cinnamon streaked with black; shoulders, similar but with outer webs more decidedly rusty; rump and upper tail-coverts, plain gray or olive-gray; tail, dusky; wing-coverts, dusky centrally, broadly margined, and tipped with pale cinnamon-buffy; greater coverts, dusky centrally broadly edged with pale buffy-brown or wood-brown; primaries, dusky edged with pale grayish. ADULT FEMALE: Similar to the adult male and not always distinguishable, but usually with the black of chin, etc., duller and much less extended, often entirely wanting, the entire head being gray, and the gray of crown and hindneck rather browner.

Nest and Eggs.— NEST: In low bushes, in deserts of Lower California, Arizona, and New Mexico; constructed of grass, weed fibers, lined with fine grasses and cow-hair. EGGS: 3 to 5, plain light greenish blue, normally unmarked.

Distribution.— More southern portions of southwestern United States and southward over Mexican plateau, north to southern California, Arizona, and southwestern New Mexico; Lower California, breeding in more northern portions, south in winter to the cape district.

A visitor from the eastern United States to the sagebrush regions of the southwest hears the song of a bird which makes him exclaim: "Why, all those bird-books are wrong! That's a Field Sparrow from home. I know his song." Then he catches sight of a little bird the size of a Chipping Sparrow, except for its longer tail. But instead of the rusty brown crown of the Field Sparrow which he had expected to see, this bird is a stranger with a gray head and a black patch on its throat. To his delight, the bird-lover has added a new acquaintance to his list — the Black-chinned Sparrow. On inquiry he finds that his new friend is fairly numerous within its limited range.

J. ELLIS BURDICK.

SLATE-COLORED JUNCO

Junco hyemalis hyemalis (*Linnæus*)

A. O. U. Number 567 See Color Plate 82

Other Names.— Snowbird; Black Snowbird; White Bill; Black Chipping Bird; Common Snowbird; Slate-colored Snowbird; Blue Snowbird; Eastern Junco.

General Description.— Length, 6 inches. Fore and upper parts, gray; under parts, white. Bill, small; wings, long and moderately rounded; tail, a little shorter than wing, double-rounded, the feathers narrow at the tips and blunt.

Color.— ADULT MALE: Head, neck, chest, upper breast, sides, flanks, and upper parts, plain slate-color,

darker on head; lower breast, abdomen, anal region, and under tail-coverts, white; six middle tail-feathers, slate-blackish, edged with slate grayish; *two outermost tail-feathers white*; bill, pinkish; iris, dark reddish brown or claret-purple. ADULT FEMALE: Similar to adult male, but the slate-color rather lighter (sometimes decidely so). YOUNG (FIRST PLUMAGE): Above, grayish brown or drab (sometimes slightly rufescent on back), rather broadly streaked with blackish; chin, throat, chest, sides, and flanks, pale dull buffy or buffy grayish, spotted or broadly streaked (except on chin) with dusky; rest of under parts white, the breast usually spotted or flecked with dusky.

Nest and Eggs.— NEST: Usually placed on the ground, under a tuft of grass or weeds, sometimes in rock crevices, or upturned tree roots; constructed mostly of dried grasses, thickly lined with hair, fur, and feathers. EGGS: 4 or 5, white or greenish-white, spotted with rufous-brown.

Distribution.— Breeding from mountains of Pennsylvania, New York, and Massachusetts, Ontario, central Michigan, northern Minnesota, northward to Labrador, western shores of Hudson Bay, and through the interior to the Arctic coast and westward to valleys of the Yukon and Kowak rivers, Alaska; migrating southward in winter to Florida, Alabama, Mississippi, Texas, Arizona, and California, straggling (?) to Point Barrow and coast of Bering Sea (Kotzebue Sound, St. Michaels, etc.), and to eastern Siberia (Tschuctschi Peninsula).

The scientists have taken hold of our old friend the Common Snowbird and done so many things to him that ordinary bird observers and the scientists themselves are quite distracted. First they are disputing over the various races of Snowbirds, not sure just how many different species and varieties to list. They have agreed upon the scientific name "Junco" for the whole group or genus and imposed that Latin name upon the English-speaking world as the common name in place of Snowbird. Maybe the children of the newer generation will look out of the windows on a Christmas morning and say "Oh, see the Juncos!" but the charm of the word "Snowbird" seems to be more worth while in childhood and in poetry at least. Bird students are taking very kindly to the new name but no one seems to know how it started and what it means. Coues says that it is derived from the Latin *juncus* meaning a seed. It was after 1830 that the word "Junco" was first brought into scientific use.

Drawing by R. I. Brasher

SLATE-COLORED JUNCO (¼ nat. size)

A sprightly and welcome winter visitor

This is a true winter bird indeed. He remains about his breeding range late into the fall and often goes only a little way to warmer climates when the food supply falls short farther north. The white-edged tail and hood-like coloring of the head makes the bird quite distinctive, and as we see him in the winter his coloring makes him very attractive against the snow or the evergreens. He is a tamer, more genial bird to us than is that other Snowbird, the White Snowbird or Snowflake that stays far afield in all kinds of weather. This Black Snowbird comes near the barns and kitchen doors, dodges in and out of the bushes in the garden, chatters cheerily in the wild cherry and thorn bushes, lisps his characteristic *tsip* from stone piles and stubble rows, and as spring comes, sings from the bushes and shorter trees his low, sweet song which Mrs. Bailey says is "as unpretentious and cheery as the friendly bird itself." And in early spring off he goes for the breeding grounds, often reaching there weeks before the nesting can begin.

The Junco is one of the most common Sparrows of America. In migration he vies in numbers with the other song birds, often being seen by the hundreds wherever there is shelter and food. In the breeding territory he chooses the cool and sheltered, and often damper localities. He breeds commonly in the Adirondacks. But farther south, any mountainous region or valley that is almost cold throughout the summer may

shelter its Junco households. Not only in eastern but in western and northern North America up to the limit of trees, and south down through Mexico to Central America the Junco is common.

It is over the Rocky Mountain and Pacific coast Juncos that the scientists have become very much disturbed, and well they might, for nearly twenty varieties of Juncos have been credited to that country. East of the Rockies there is one great variety, the Slate-colored or Eastern Junco that occupies an area greater than any dozen varieties of the West. Far up to the northwest our Eastern Snowbird goes, sometimes pushing on to the limit of trees on the lower Coppermine and Mackenzie rivers. Many cross the Rockies up in that far northwest to the headwaters of the Yukon, and spread out in large numbers down the Yukon and up its tributaries occupying most of central, northern, and western Alaska. Some even fly through the Aleutian Islands to the mainland of Siberia to nest on the inhospitable rocks of a strange corner of the Old World. The other varieties of Juncos do not extend farther north than southern Alaska and northern British Columbia.

A variety of the Eastern Junco is the Carolina Junco (*Junco hyemalis carolinensis*), which exhibits a remarkably short migration route. It inhabits the southern Alleghenies and is slightly larger than the Eastern and not so brownish. Dr. W. W. Cooke said that in the fall migration "no Juncos were seen at Weaverville, N. C. before October 18th, though they nested upon the neighboring mountains, within five minutes' flight."

The other varieties are all Western and they show all sorts of interesting variations of color, but the habits of nesting, feeding, and singing are all very much alike. The White-winged Junco (*Junco aikeni*), larger than the Eastern, has two white wing bars and more white in the tail. The White-wing breeds in the Black Hills and surrounding country, and migrates less than 500 miles to southeastern Colorado for the winter. Within its area it is found in immense numbers.

Maybe the handsomest is the Oregon Junco (*Junco hyemalis oreganus*) with a black head and breast, sharply defined against a mahogany-brown back, white under parts, and pinkish-brown sides. This is a bird of the North Pacific coast. Shufeldt's Junco (*Junco hyemalis connectens*) is like the Oregon but with colors less intense. It is found in the mountains from Alberta to eastern Oregon. Thurber's Junco (*Junco hyemalis thurberi*) has a paler back and is a California mountain bird. The Point Pinos Junco (*Junco hyemalis pinosus*) is like Thurber's but has the throat and breast gray, and haunts the coast of a part of southern California. The Montana Junco (*Junco hyemalis montanus*) is one of the slaty-hooded and brown-backed Juncos. It belongs in the higher Rockies of Idaho, Montana, and north to Alberta. The Pink-sided Junco (*Junco hyemalis mearnsi*) has broadly pinkish sides and ranges in the mountains from northern Montana to Idaho and Wyoming. Ridgway's Junco (*Junco hyemalis annectens*) is discarded by Ridgway himself as only a hybrid. It is found from Wyoming to New Mexico. The Arizona Junco (*Junco phæonotus palliatus*) has no pink sides but has a dark brown back. It ranges from southern Arizona into Mexico, and is said to have less of the manners of a Junco than of a Water Thrush. The Red-backed Junco (*Junco phæonotus dorsalis*) has a bright rufous back and a pink bill. It belongs in the higher mountains of Arizona and New Mexico. The Gray-headed Junco (*Junco phæonotus caniceps*) is of darker gray with belly whiter than the preceding. It finds its home in the higher mountains of Colorado, Utah, and Nevada. South of the United States are found Townsend's, Baird's, Guadalupe, Mexican, Chiapas, Guatemala, and Irazu Juncos. The first three of these are of occasional occurrence in the southwestern United States. All of which means that east of the Rockies we may still love the cheery Black Snowbird that is frequently willing to pick at a dinner laid out near our doors and windows, but that elsewhere we may see all kinds of colors and sizes and variant types, and maybe new kinds of Junco characters and dispositions. L. Nelson Nichols.

The insect food of the Juncos is composed almost entirely of harmful species, of which caterpillars form the the largest item. Juncos do no damage to fruit or grain. They eat large quantities of weed seed (61.8 per cent.), thereby rendering service to agriculture. They should be rigidly protected.

BLACK-THROATED SPARROW

Amphispiza bilineata bilineata (*Cassin*)

A. O. U. Number 573

Other Name.— Black-throat.

General Description.— Length, 5¼ inches. Upper parts, gray; under parts, white. Bill, small; wing, long and slightly rounded; tail, trifle shorter than wing, rounded or double rounded, the feathers broad and rounded at the ends.

Color.— ADULTS: *Conspicuous stripe over eye* and on cheeks, *pure white*; the front portion of the cheek region, together with the chin, throat, and center portion of chest, uniform black, the last with a convex (sometimes angular) posterior outline; rest of under parts, white shading into grayish on sides and flanks; the latter, together with anal region and under tail-coverts, tinged with buffy in winter plumage; upper parts, deep, slightly brownish, gray, becoming more brownish (nearly hair-brown) on back and wings; sides of head (between the two white stripes), plain gray like crown; the tail, *blackish with white on edge and tip of outermost feathers;* iris, deep brown. YOUNG: Similar to adults but without any distinct black markings on head, etc.; the chin and throat, white sometimes flecked with grayish; the chest streaked with the same.

Nest and Eggs.— NEST: Placed in sagebrush, cactus, or other desert shrubs, near ground; constructed of fine shreds of bark, dried grasses, lined with fine blades of the latter. EGGS: 3 or 4, plain greenish or bluish white.

Distribution.— Middle and eastern Texas (except along Gulf coast?), north to Oklahoma, western Kansas, and eastern Colorado (?), south into States of northeastern Mexico.

The Black-throated Sparrow is a very plentiful and beautiful songster of the one area of the United States that certainly does need song. If there is any area in the world that is more dreary than another it is a desert. A song is needed and many of them to cheer the weary humans that travel the long hot routes across the southwestern country. Mrs. Bailey gives the bird the credit due to him when she says: "On all our walks through the thorn brush and climbs over the agave-speared hills we found the lovely little bird everywhere, sitting on top of the bushes singing with head thrown back in fine enjoyment of his bright lay." The bird has a most winsome manner, all out of keeping with the surroundings. Its cheery *tra-ree'-rah, ree'-rah-ree* with many variations can be heard throughout all our southwestern desert country and far down on the Mexican plateau. In most places it is very common, exceeding in frequency all other birds in the area.

Drawing by R. I. Brasher

BLACK-THROATED SPARROW (¼ nat. size)

A handsome and sprightly little bird whose sweet song is most welcome in the western deserts

The ornithologists have found slight differences by which they define three species. The eastern race, the common Black-throated Sparrow, extends from western Kansas south through Texas and across the Rio Grande into the nearer Mexican States. The western race is named justly the Desert Sparrow or Desert Black-throat (*Amphispiza bilineata deserticola*), and has much the larger breeding area. It extends from the Pecos country of Texas, west to the Pacific, and from Nevada and Utah south to Lower California, Sonora, and Chihuahua. The third race is the Mexican Black-throated Sparrow (*Amphispiza bilineata grisea*) that ranges over the central Mexico plateau.

Mrs. Bailey gives very clear reasons for enthusiasm for this bird. She says, "When we camped on the arid mesa of the Pecos River, among the sounds that were oftenest in our ears were the songs of the Mockingbird and Nonpareil, the iterant *pe-cos'* of the Scaled Quail, and the calls of the Verdin and Roadrunner, while, mingled with them, always tinkling from the bushes, was the cheery little tune of *Amphispiza*."

BELL'S SPARROW

Amphispiza belli (*Cassin*)

A. O. U. Number 574

General Description.— Length, 5½ inches. Upper parts, gray; under parts, white. Bill, small; wing, long and slightly rounded; tail, trifle shorter than wing, rounded or double rounded, the feathers broad and rounded at the ends.

Color.— ADULTS: Above (including ear region and sides of neck), deep brownish slate-gray becoming browner on back, where, as well as on crown, sometimes narrowly streaked with blackish or dusky; wings and tail, dull blackish with light brown edgings (pale grayish on primaries), the middle and greater coverts indistinctly tipped with pale brownish buffy or pale wood-brown; eye-ring, cheek stripe, and under parts in general, white; *broad stripe on sides of throat and foreneck, and spot in middle of chest, black or dusky-grayish;* sides and flanks, tinged with buffy and streaked with dusky; edge of wing, pale yellow; iris, brown. YOUNG: Crown and hindneck, dull gray, the former broadly streaked with black; back and shoulders, grayish brown broadly streaked with black; under parts, pale yellowish buff; the chest and sides of throat broadly streaked with blackish, the breast, sides, and flanks with smaller streaks of the same; a buffy whitish eye-ring; wings and tail much as in adults.

Nest and Eggs.— NEST: In bushes, within 3 feet of the ground; composed of grasses, vegetable fibers, weed stems; lined with fine grass and hair. EGGS: 3 or 4, pale greenish-blue finely speckled with dark reddish-brown, chiefly at large end.

Distribution.— Central and southern California (valleys and foothills) west of the Sierra Nevada, and Colorado Desert from about latitude 38°, and south into northern Lower California; also on the Santa Barbara Islands.

On the alkali plains of the Southwest, where only yuccas, sagebrush, and cacti grow, is the home-land of Bell's Sparrow and its variants, the Sage Sparrow (*Amphispiza nevadensis nevadensis*), Gray Sage Sparrow (*Amphispiza nevadensis cinerea*), and the California Sage Sparrow (*Amphispiza nevadensis canescens*). Here, amid the dreary wastes of hot sands, these grayish brown or brownish gray little mites cheerfully go about the duties of their lives, preaching sermons on patience, courage, and the joy of life to all their human friends.

PINE-WOODS SPARROW

Peucæa æstivalis æstivalis (*Lichtenstein*)

A. O. U. Number 575

General Description.— Length, 5½ inches. Upper parts, brown and gray in streaks; under parts, whitish. Wings, rather short and rounded; tail, equal to or longer than wing, graduated, the feathers narrow but with rounded tips.

Color.— ADULTS: Above, gray broadly streaked with chestnut-brown; tail, dusky with broad gray edgings; the middle pair of feathers, gray with a center stripe of dusky; edge of wing, light yellow; sides of head and neck, smoke-gray or dull ash-gray, the latter streaked with chestnut or dark chestnut-brown; a narrow chestnut or chestnut-brown stripe behind eye; chin and throat, very pale dull grayish or buffy grayish white deepening on chest, sides, and flanks into pale grayish-buffy or buffy-grayish; iris, brown.

Nest and Eggs.— NEST: On ground, among palmetto scrubs; constructed of fine dry grasses, in a neat, symmetrical manner. EGGS: 4, pure white.

Distribution.— Breeds in southern Georgia and northern Florida; winters in Florida.

The Pine-woods Sparrow of Florida and its northern variety Bachman's Sparrow, or Southern Pine Finch (*Peucæa æstivalis bachmani*) are striped Sparrows that are distinctly southern birds. In the east they are credited as coming only as far north as southern Virginia, but in the central west they reach southern Ohio, and central Illinois. In the far South they haunt only the pine woods and nest in the palmetto scrub in the pineries. Further north they show greater variations of nesting sites, but always on the ground, with the

nest "distinctly roofed-over or domed," according to the description given by Major Bendire. He continues by saying that the nests "are cylindrical in shape, about seven or eight inches long by three in height . . . and the roof a little over half an inch in thickness. . . . The nests are all constructed out of dry grasses exclusively, and are lined with fine grass tops only. Some are much more artistically and compactly built than others."

Yet a greater claim to attention this bird has in its beautiful song. Dr. Chapman in speaking of the Pine-woods Sparrow, goes so far as to say, "In my opinion its song is more beautiful than that of any other of our Sparrows. It is very simple — I write it *chee-e-e-e--de, de, de; che-e--chee-o, chee-o, chee-o, chee-o* — but it possesses all the exquisite tenderness and pathos of the melody of the Hermit Thrush; indeed, in purity of tone and in execution I should consider the Sparrow the superior songster."

The Southern Pine Finch (Bachman's) has a song very similar to the Pine-woods Sparrow's. Its song has been compared to the plaintive song of the Field Sparrow, but louder and far sweeter. As far north as the Ohio River, the Southern Pine Finch may be heard (and seldom seen) in open oak woods. Dr. W. W. Cooke found that it is extending its range north of the Potomac and over the Monongahela.

SONG SPARROW

Melospiza melodia melodia (*Wilson*)

A. O. U. Number 581 See Color Plate 84

Other Names.— Silver Tongue; Everybody's Darling; Ground Sparrow; Hedge Sparrow; Bush Sparrow; Ground-bird; Marsh Sparrow; Red Grass-bird; Swamp Finch.

Drawing by R. I. Brasher

SONG SPARROW (⅓ nat. size)

A sweet singer of the spring and summer and a useful friend the year round

General Description.— Length, 6½ inches. Upper parts, brown and black in streaks; under parts, white streaked with black. Wings, short and rounded; tail, about the length of wing, rounded or double rounded, the feathers narrow and blunt.

Color.— Adults: Crown, brown narrowly streaked with black and divided by a narrow center stripe of gray; hindneck, brownish gray streaked or washed with brown; shoulders and between, black centrally producing streaks, these margined laterally with brown; the edges of the tail-feathers, brownish-gray; rump, olive-grayish streaked with brown; upper tail-coverts, browner than rump and more distinctly streaked; tail, brown; lesser wing-coverts, brown; middle coverts, brown margined terminally with pale brownish gray; greater coverts, brown margined terminally with paler and marked with a broad center tear-shaped (mostly concealed) space of blackish; inner wing-quills, mostly blackish, but outer webs chiefly brown; edge of wing, white; a broad stripe of olive-gray over eye; a broad cheek stripe of dull white or pale buffy, margined below by a conspicuous stripe or triangular spot of black or mixed brown and black; under parts, white; *the chest, marked with wedge-shaped streaks of black* edged with rusty brown, these streaks in lower central portion of chest, or upper breast, *forming an irregular spot*; sides and flanks, streaked with black and rusty-brown; under tail-coverts, white or pale buffy; iris, brown. (In summer the colors grayer, with streaks on chest, etc., narrower, sometimes wholly black; in winter the general coloration browner, the brown parts more rusty.) Young: Much like adults, but without any gray on upper parts; the crown, duller brown with the indistinct center stripe dull grayish buffy and the narrow blackish streaks much less distinct than in adults; ground color of back and shoulders, light buffy brownish or dull buffy; under parts, duller white, often quite buffy, with the streaks narrower and much less distinct.

Nest and Eggs.— Nest: Typical site on ground, in fields, adjoining woods, sheltered under a tussock of grass; sometimes in bushes, cedar or other small trees, or in hollows of apple or other trees; constructed of

grass, weed stems, leaves, lined with fine grass and hair. EGGS: 4 or 5, dull pale greenish spotted thickly or sparsely spotted or blotched with shades of reddish or dark brown and lavender.

Distribution.— Breeds in the United States (except the South Atlantic and Gulf States), southern Canada, southern Alaska, and Mexico; winters in Alaska and most of the United States southward.

This is probably the best known of the very large Sparrow family. It lacks the full measure of the Chipping Sparrow's pretty confidence in the friendliness of man, and rather prefers the fields and the roadsides to the immediate vicinity of human habitations; but against these negative qualities are to be placed its more characteristic plumage, and above all its real genius as a songster. Thousands of persons, old and young, who pay little or no heed to the song of the Field Sparrow or the Vesper Sparrow or the Fox Sparrow, recognize instantly the characteristic little *motif* of the Song Sparrow. And the bird lays an additional claim on the friendship and sympathy of all, by the fact that it is a frequent winter resident in the northern States. Though to untrained observation confusingly like some of the other Sparrows, this bird should

Photo of a mounted group in the Am. Mus. Nat. Hist. Courtesy of Nat. Asso. Aud. Soc.

CENTERS OF DISTRIBUTION OF SEVEN OF THE GEOGRAPHICAL RACES OF THE SONG SPARROW

1. Aleutian; 2. Sooty; 3. Heermann's; 4. Mountain; 5. Desert; 6. Mexican; 7. Eastern

readily be identified by its strongly marked breast, its stubby bill, and its slightly forked tail, as shown in flight.

The Song Sparrow takes his singing very seriously. Almost invariably he presents his recital from the top of a bush or a fence post or a comparatively low tree. Always as he begins to sing he throws his head backward, and points his bill at an angle of about 45 degrees, and this position he retains until the song is finished. He seems intent upon sending his little prayer of thankfulness straight up to heaven, by the shortest route. Over and over again the sweet and sincere little petition is offered — and who can doubt that it is heeded? There are very many variations of the song, and sometimes

Photo by S. A. Lattridge

YOUNG SONG SPARROWS

several are presented in succession by the same singer. Mr. Burroughs records one bird who "had five distinct songs, each as markedly different from the others as any human songs, which he repeated one after another. He may have had a sixth or a seventh, but he bethought himself of some business in the next field, and flew away before he had exhausted his repertory." (*Ways of Nature.*) Mr. Mathews devotes several pages, in his *Field Book of Wild Birds and Their Music*, to many variations of the song, reduced to musical notation. The commonest form, however, begins with two notes on the same pitch, followed by a third, four or five tones higher, all of these accented, and followed by a descending run in the same general rhythm. Whatever the form of the song, however, its spirit is always the same, and Mr. Burroughs interprets this very faithfully when he says that it expresses "simple faith and trust."

No other bird of the temperate and arctic regions of North America, with the possible exception of the Horned Lark, has proved so sensitive to influences of physical environments, and as a result it has become divided into a large number of geographic forms, some of extensive, others of very circumscribed range. In every case the area of distribution coincides exactly with the uniformity or continuity of physical conditions. Thus the form having the widest distribution is that inhabiting the Atlantic watershed, or the entire region from the Atlantic coast to the wooded valleys of the Great Plains, while those of the most limited range belong to the Pacific slope, where the topographic and resultant climatic features are so varied and complicated. In California nearly every distinct drainage area has its own peculiar form of the Song Sparrow; one form, the Alameda Song Sparrow (*Melospiza melodia pusillula*), is strictly limited to the salt marshes around San Francisco Bay.

The Mountain Song Sparrow (*Melospiza melodia montana*) is found in the Rocky Mountain district of the United States west to and including the Sierra Nevada, in California, north to eastern Oregon, southern Idaho, and southern Montana; south in winter to western Texas and northern Mexico. In coloration it is grayer than the type species, its tail and wings are longer, and its bill is smaller and relatively more slender.

Merrill's Song Sparrow (*Melospiza melodia merrilli*) is very much like the Mountain Song Sparrow; it is slightly darker and more uniform above and the grayish edging to the feathers of the shoulders and the space between them are less strongly contrasted with the darker centers which are usually more brown than black. It breeds from northern California (in the mountains), through Oregon and Washington east of the Cascade Mountains, to northwestern Idaho; in winter it goes south into Nevada, Utah, Arizona, and northern Sonora.

The slender bill of the Desert Song Sparrow (*Melospiza melodia fallax*) is like that of the Mountain Song Sparrow, but its tail and wings average decidedly shorter and its coloration is conspicuously paler and more rusty. It inhabits the Sonoran desert district of southwestern Arizona, southern Nevada, southeastern California, northeastern Lower California, and Sonora.

Heermann's Song Sparrow (*Melospiza melodia heermanni*) is found in the central valleys of California, including the lower levels of the

SONG SPARROW *Melospiza melodia melodia* (Wilson)

SWAMP SPARROW
Melospiza georgiana (Latham)
SPRING
AUTUMN

LINCOLN'S SPARROW
Melospiza lincolni lincolni (Audubon)

TOWHEE
Pipilo erythrophthalmus erythrophthalmus (Linnaeus)
MALE
FEMALE

All ⅔ nat. size

Sacramento and San Joaquin basin. It is smaller than the type species and darker and browner in coloration.

The San Diego Song Sparrow (*Melospiza melodia cooperi*) is slightly smaller than Heermann's Song Sparrow; the prevailing color of the back is a grayish-olive broadly streaked with black. It lives in the southern coast district of California and the northern Pacific coast district of Lower California.

On the San Clemente, San Miguel, and Santa Rosa islands, California, is found the San Clemente Song Sparrow (*Melospiza melodia clementæ*); it is larger than the San Diego Song Sparrow and grayer in coloration, the back being a light olive-gray with narrower black streaks.

The Santa Barbara Song Sparrow (*Melospiza melodia graminea*) found on the Santa Barbara and Santa Cruz islands, California, is like the San Clemente in color but smaller in size.

Samuels's Song Sparrow (*Melospiza melodia samuelis*) is exactly like Heermann's Song Sparrow in color but in size it is much smaller and its bill is more slender. It is found on the coast slope of central California, except in the salt-water marshes of San Francisco Bay, from Santa Cruz County to Humboldt County.

Similar in size and proportions to Samuels's Song Sparrow but very different in coloration is the Mendocino Song Sparrow (*Melospiza melodia cleonensis*) of the northern coast district of California and southwestern Oregon; its general color is more reddish, the upper parts being a deep rusty olive, conspicuously and broadly streaked with dark rusty-brown, or chestnut, and black; the streaks on the chest are also dark rusty-brown or chestnut.

The Rusty Song Sparrow (*Melospiza melodia morphna*) breeds from the extreme southern portion of Alaska through British Columbia to western Oregon and in winter it travels south to southern California. It is larger than the Mendocino Song Sparrow but its coloration is similar, the rusty brown or chestnut streaks on the back being less strongly contrasted with the rusty olive ground color.

In southern Alaska, on the coast and the islands off the coast is the home of the Sooty Song Sparrow (*Melospiza melodia rufina*). In winter it comes south to the coast of British Columbia, Vancouver Island, and northwestern Washington. It is larger than the Rusty Song Sparrow and darker — sooty rather than rusty.

Four other Alaskan Song Sparrows are the Yakutat (*Melospiza melodia caurina*), the Kenai (*Melospiza melodia kenaiensis*), the Kodiak, or Bischoff's (*Melospiza melodia insignis*), and the Aleutian (*Melospiza melodia sanaka*). The Yakutat is a little larger than the Sooty, the Kenai is larger than the Yakutat, and the Kodiak and Aleutian are still larger. All are grayer in coloration.

The food of this species varies considerably. About three-fourths of its diet consists of the seeds of noxious weeds and one-fourth of insects. Of these, beetles, especially weevils, constitute the major portion. Ants, wasps, bugs (including the black olive scale), and caterpillars are also eaten. Grasshoppers are taken by the eastern bird, but not by the western ones.

LINCOLN'S SPARROW

Melospiza lincolni lincolni (*Audubon*)

A. O. U. Number 583. See Color Plate 84

Other Names.— Lincoln's Song Sparrow; Lincoln's Finch.

General Description.— Length, 5¾ inches. Upper parts, brown and olive, streaked with black; under parts, buff and white, streaked with black. Wings, short and rounded; tail, about the length of wing, rounded or double-rounded, the feathers narrow and blunt.

Color.— ADULTS: Crown, light mummy-brown, conspicuously streaked with black and divided by a center stripe of olive-grayish; hindneck, back, shoulders, rump, and upper tail-coverts, light olive or buffy olive sharply streaked with black, the streaks broadest on back; outer surface of wings, more rusty brownish especially on innermost greater coverts and secondaries; the greater coverts and inner wing-quills conspicuously blackish centrally; tail, light grayish brown; sides of neck grayish or olive-grayish; ear region similar, but rather darker or browner; cheek region, space behind ear, *broad band across chest*, sides, flanks, and under tail-coverts *buffy*; *the chest*, sides, flanks, and under tail-coverts *streaked with black*; rest of the under parts white, the throat usually flecked or streaked with black.

Nest and Eggs.— NEST: On ground, in marshy land; constructed entirely of grass, lined with finer

blades of the same material. EGGS: 3 or 4, white, pale greenish or brownish white rather coarsely blotched with chestnut and lavender-gray chiefly around large end.

Distribution.— North America at large; breeding chiefly north of the United States and in the higher parts of the Rocky Mountains and Sierra Nevada; south in winter to Panama.

"Bird-afraid-of-his-shadow," W. Leon Dawson calls this Sparrow, and then he asks, "Why should a bird of inconspicuous color steal silently through our woods and slink along our streams with bated breath as if in mortal dread of the human eye? Are we such hobgoblins?" Yet this appears to be the characteristic demeanor of the bird throughout its very wide range. And the tendency of this conduct to make the bird little known is strengthened by its habit of arriving in the northern latitudes after most of the other birds are on hand and engaging our attention, and departing in the fall with the general wave of migrating Sparrows, in which it loses its identity.

From the Song Sparrow, which it closely resembles, it may be distinguished by its smaller size, its shorter tail, the buff belt across its narrowly streaked breast, and the olive-gray color of the sides of its head. Its song, which is not often heard, is, according to Dr. Dwight, "not loud, and suggests the bubbling, guttural notes of the House Wren, combined with the sweet rippling music of the Purple Finch, and when you think the song is done there is an unexpected aftermath."

The food of the Lincoln Sparrow resembles that of the Song Sparrow, but more ants and fewer grasshoppers are destroyed than by the Song Sparrow.

In British Columbia and western Washington is a variety of the Lincoln Sparrow called Forbush's Sparrow (*Melospiza lincolni striata*). In migration it is found in California also. The stripe over the eye and the upper parts are more strongly olivaceous and the dark streaks of the back are blacker and more numerous. Its habits are similar to those of its congener.

SWAMP SPARROW

Melospiza georgiana (*Latham*)

A. O. U. Number 584 See Color Plate 84

Courtesy of Am. Mus. Nat. Hist.

SWAMP SPARROW (¼ nat. size)

A sprite of swampy country

Other Name.— Swamp Song Sparrow.

General Description.— Length, 5¾ inches. Upper parts, brown streaked with black; under parts, gray. Wings, short and rounded; tail, about the length of wing, rounded or double rounded, the feathers narrow and almost pointed at the tip.

Color.—ADULTS: Forehead, black divided by a center line of grayish or whitish; *crown, chestnut* sometimes streaked with blackish; back of head, blackish laterally, grayish centrally; back and shoulders, light brown broadly streaked with black; rump, olive-brownish streaked with dusky; upper tail-coverts, more rusty brown, distinctly streaked with black; tail, rusty brown; exposed surface of greater wing-coverts and secondaries chestnut; *inner wing-quills black, edged on outer webs with chestnut* and buffy; sides of neck and hind-neck, gray; ear region, brownish gray, or light brownish margined above by a distinct streak behind eye of black and chestnut and beneath by a narrower streak of same; chin, throat, and abdomen, white or grayish white; chest, light gray or brownish gray, sometimes narrowly and indistinctly streaked with dusky; sides and flanks (especially the latter), tawny brown; under tail-coverts, buffy with central marks of dusky.

Nest and Eggs.— NEST: Placed on ground in a

bunch of flags or sedge grass, in or on edge of marshes, or wet meadows; constructed entirely of grass and a few leaves, lined with finer similar material. EGGS: 4 or 5, pale greenish or bluish white, clouded with yellowish brown and lilac.

Distribution.— Eastern North America to the Plains, north to the British provinces, including Newfoundland and Labrador; breeds from the northern States northward; and winters from Massachusetts southward to the Gulf States.

Any swamp — within its natural range — whether near the ocean or inland, is good enough for the Swamp Sparrow, and occasionally it spends the winter — if the weather be not too severe — in cat-tail marshes along the coast of Long Island and southern New England. The song resembles that of the Chipping Sparrow, though the quality of the tone is sweeter and fuller.

Walter S. Barrows says, in *Michigan Bird Life:* "In our own experience the song merely suggests that of the Chipping Sparrow, but the notes are less rapid, far sweeter, and have a distinct metallic or bell-like tone which suggests the ring of cut glass."

The bird's plain breast distinguishes it from the Song Sparrow, many of which are found in the swamps in autumn, while in the spring its reddish-brown wings and chestnut-colored crown are not duplicated by any member of its family, save the Chipping Sparrow, which does not frequent swamps and has a more slender figure.

The food habits of this bird are similar to those of the Song Sparrow. It takes more seeds of polygonums than most birds and eats largely of the seeds of the sedges and aquatic panicums that abound in its swampy habitat.

NEST AND EGGS OF SWAMP SPARROW

FOX SPARROW

Passerella iliaca iliaca (*Merrem*)

A. O. U. Number 585 See Color Plate 83

Other Names.— Foxy Finch; Ferruginous Finch; Fox-tail; Fox-colored Sparrow.

General Description.— Length, 6½ inches. Upper parts, gray streaked with brown, or uniform chestnut; under parts, white spotted with chestnut. Bill, large, conical, sharp-pointed, and strong; wings, long and pointed; tail, about ⅝ length of wing, very slightly rounded or double rounded.

Color.— ADULTS: Upper parts, mixed deep rusty and brownish gray in variable proportions. I. GRAY PHASE: Above, olive-gray, the back and shoulders broadly *streaked with rusty brown or chestnut*, the crown tinged with the same; lower rump and upper tail-coverts, cinnamon-rufous; the middle and greater wing-coverts, *narrowly tipped with whitish*; wings and inner webs of tail-feathers, dusky brown; under parts, white heavily spotted on chest, sides of throat, etc., with chestnut-rufous; the sides and flanks, broadly streaked with same. II. RUFOUS PHASE: Above, nearly uniform chestnut or chestnut-rufous, the upper rump, sides of neck, and ear region slightly intermixed with olive or olive-grayish; under parts as in the gray phase, but the chestnut-rufous spots larger, more confluent.

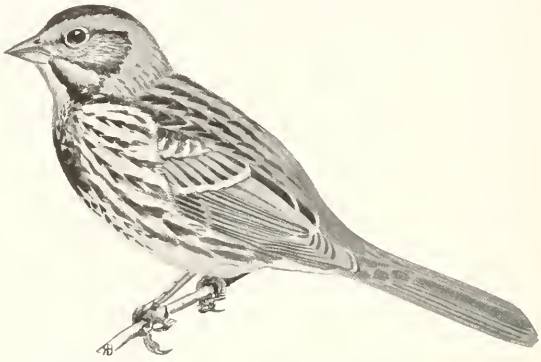
Nest and Eggs.— NEST: On ground, under evergreens; constructed of grass, moss, fine twigs, and a

few leaves; lined with fine grass and feathers. EGGS: 4 or 5, pale bluish green, heavily speckled with chestnut or umber-brown.

Distribution.— Northern North America; breeding from Nova Scotia, Magdalen Islands, Anticosti Island, Newfoundland, northern Maine, Province of Quebec, etc., northward and northwestward to valley of Lower Anderson River, Kowak River, and Bering seacoast of Alaska (north of the Alaska peninsula); south in winter to northern Florida and westward to middle Texas, and eastern base of Rocky Mountains; occasional on southern coast of Alaska during migration.

This is not only one of the largest, but is the handsomest and withal perhaps the most characteristic of the American Sparrows. Most of the members of this very large family are modestly garbed, and furthermore there is so much similarity in their plumage, that sometimes it takes a sharp eye and acute observation to distinguish one species from another. But "Foxy" may readily be identified not only by his size, but by his rich tawny coloring (like that of a fox in his summer pelage), as well as by certain of his mannerisms, and by his fine song. It should be remembered, too, that though he is frequently seen in many regions which he traverses in his migrations, he is essentially a migrant as far as the United States are concerned. His real home — that is, the regions in which he breeds — is in the great forests of Canada. In the general latitude of New York and New England, he tarries, in his northward journey, from the middle of March to the end of April, and in his southward passage, from about the middle of October to the end of November. During these visits he is likely to be found both in open woods and in bushes skirting fields.

When feeding on the ground one of his mannerisms is his habit of scratching with both feet at once, and often with such vigor as to make a considerable commotion in the dry leaves. Another peculiarity of the bird is shown when a flock of them are disturbed while feeding on the ground. Under these conditions, instead of seeking concealment in the brush (as their relatives are likely to do), these Sparrows generally fly to the low branches of the nearest trees where they are apt to remain in plain sight, and whence they return in a few minutes to the ground, if they are not much frightened.



Drawing by R. I. Brasher

FOX SPARROW (⅔ nat. size)

A handsome bird whose sweet whistle is all too infrequently heard

"Foxy's" song — most frequently heard in the United States in spring — is one of the finest of Sparrow ditties. It is a series of whistled notes in descending intervals, and somewhat resembles the lay of the Vesper Sparrow, though the tone is much mellower and sweeter than the Vesper's. Furthermore its technique is distinctive in that the notes are very prettily slurred together like those of the warbling birds. The song is to be heard in the United States when the birds are foraging in little flocks, but even then altogether too infrequently; for many a bird-lover has never heard it at all.

The food of the Fox Sparrow consists of 14 per cent. animal matter and 86 per cent. vegetable.

The animal food is of little interest excepting in the spring when it eats largely of millepedes of the *Julus* group and at the same time developes a taste for ground beetles. The vegetable food differs from that of most other Sparrows, in that it contains less grass seed, less grain, and more fruit, ragweed, and polygonum. Half of the food consists of ragweed and polygonum, and more than a quarter of fruit. It does no direct damage to cultivated fruit, though it occasionally eats the buds of peach trees and pear trees. Bradford Torrey has observed it feeding on the fruit of burning bush.

In western North America, Ridgway recognizes eight forms of the Fox Sparrow. These are all browner than the type species, but vary otherwise and from one another only in small details. They are the Shumagin Fox Sparrow (*Passerella iliaca unalaschcensis*), found in the Shumagin Islands and the Alaska Peninsula; the Kodiak Fox Sparrow (*Passerella iliaca insularis*), found in summer on Kodiak Island, Alaska, and in winter south along the coast slope to southern California; the Yakutat Fox Sparrow (*Passerella iliaca annectens*), living in summer on the coast of Alaska from Cross Sound to Prince William Sound and in winter south to California; Townsend's Fox Sparrow (*Passerella iliaca townsendi*), making its home in the coast district of southern Alaska and in the winter going south to northern California; the Sooty Fox Sparrow (*Passerella iliaca fuliginosa*) summering in the coast district, British Columbia, on Vancouver Island, and in northwestern Washington and wintering south along the coast to San Francisco; the Slate-colored Fox Sparrow (*Passerella iliaca schistacea*), living in the Rocky Mountain district, north to the interior of British Columbia and south to New Mexico and Arizona and east to Kansas; the Thick-billed Fox Sparrow (*Passerella iliaca megarhyncha*), breeding on both slopes of the Sierra Nevadas from Mount Shasta southward; and Stephens's Fox Sparrow (*Passerella iliaca stephensi*), breeding on the mountains of San Bernardino and San Jacinto in southern California.

TEXAS SPARROW

Arremonops rufivirgatus (*Lawrence*)

A. O. U. Number 586

Other Name.— Green Finch.

General Description.— Length, 5¾ inches. Upper parts, olive-green; under parts, white. Wings, short and much rounded; tail, shorter than wing.

Color.— ADULTS: Above, plain grayish olive-green (wings and tail brighter); the crown, with two broad lateral stripes of chestnut-brown separated by a central stripe of olive or grayish olive-green; sides of head, dull grayish relieved by a streak of chestnut-brown; a narrow ring of dull white around eye; under parts, dull whitish (pure white on abdomen); the chest, sides, and flanks, shaded with buffy grayish; edge of wing, light yellow; iris, brown. YOUNG: Above, dull brownish, including crown; the wing-coverts, edged and tipped with tawny; beneath similar, but rather paler, becoming buffy or tawny on abdomen.

Nest and Eggs.— NEST: In open thickets, or low bushes, within three feet of ground; constructed of weed stalks, grasses, leaves, lined with fine grass and hair; semi-domed, being built obliquely, the upper rim extending over, hiding the eggs from perpendicular view. EGGS: 4, plain, dull white.

Distribution.— Southern Texas and south through northeastern Mexico.

There is nothing very noticeable about the Texas Sparrow and it is a bird that very few Americans will ever see. Its plain olive and brown colors do not attract attention, and its very restricted area within the United States will never make it a well-known bird. The genus to which it belongs is pretty well known all through Mexico and Central America, and has been called the genus of Middle American Sparrows. This species is the only one of the genus that has crossed the Rio Grande. The others are pretty well spread out over Mexico, and down through the Central American States and Panama.

The Texas Sparrow is practically non-migratory and occupies in our area only a small triangle in southern Texas. It does not extend much more than three hundred miles up the Rio Grande and about two hundred miles up along the Texas coast. In Mexico it occupies an area about the same size just across the Rio Grande.

Further south toward Vera Cruz there is a variety that is darker and has been named the Cordova Sparrow.

The Texas and Cordova Sparrows are simple songsters. They frequent thickets and brush fences, and place their nests in thick bushes not far from the ground. Their molts do not make any conspicuous changes in their appearance. As the males, females, and immature all have very much the same appearance, and they live throughout the year in nearly the same places, there is a certain uniformity and dullness in their lives that make this bird different from most American birds, among whom there is something remarkable and interesting happening every year.

TOWHEE

Pipilo erythrophthalmus erythrophthalmus (*Linnæus*)

A. O. U. Number 587 See Color Plate 84

Other Names.— Chewink; Towhee-bird; Swamp Robin; Bullfinch (in Virginia); Red-eyed Towhee; Ground Robin; Towhee Bunting; Jo-ree; Marsh Robin; Bush-bird; Turkey Sparrow.

General Description.— Length, 8 inches. Fore and upper parts, black; under parts, white and brownish. Wings, rather short and much rounded; tail, longer than wing, rounded, the feathers broad with compact webs and rounded tips; feet, stout.

Color.— Adult Male: Head, neck, chest, and upper parts, black; sides and flanks, uniform cinnamon-rufous; anal region and under tail-coverts, cinnamon-buffy; breast and abdomen, white; eighth to fourth or third primaries with basal portion of outer webs, white, forming a patch; outer webs of wing feathers, broadly edged with white for part of their length; bill, wholly black in summer; iris, red. Adult Female: Similar to the adult male, but with the black portions replaced by brown (dull prouts brown above, lighter, more cinnamon-brown or raw umber on throat and chest). Young Male: Above, dull fulvous-brown, darker and uniform on head, elsewhere indistinctly streaked with dusky; wings, dull black, the coverts edged with buffy brown; wing feathers with a broad lateral stripe of buffy whitish; primaries, marked with white, as in the adult; tail, as in adult male; chin and throat, plain pale buff, with an interrupted blackish stripe on each side; chest, deeper buff, thickly marked with cuneate and arrow-like streaks of dusky; breast and abdomen, dull white.

Nest and Eggs.— Nest: On the ground, under a clump of grass, weeds, or bushes, in deep woods or open, first growth clearings, sunk to level of surface and always exceptionally well concealed; construction rather variable, sometimes carelessly made, at others quite firm and compact; made of leaves, twigs, grass, and vegetable fibers, well lined with grass and rootlets. Eggs: 4, white or pale pinkish white, thickly sprinkled with light chestnut.

Distribution.— Eastern United States and more southern British provinces west to edge of the Great Plains, in Manitoba, North Dakota, Kansas, Oklahoma, etc.; breeding from near the Gulf coast, north to Maine, Ontario, Manitoba, etc.; south in winter to southern Florida, Gulf coast in general, and eastern and central Texas; casual in New Brunswick.

Drawing by R. I. Brasher

TOWHEE (⅞ nat. size)

A skillful ventriloquist "who scratches like a hen"

Both of the names, "Towhee" and "Chewink," by which this bird is commonly known, are intended to represent its characteristic call-note, and the difference between the sound of the two words furnishes an interesting illustration of how differently two persons may hear the same syllables. That many ornithologists, whose hearing should be very keen and discriminating, make the syllables "tow-hee" out of the call is shown by the fact that the American Ornithologists' Union has adopted that name for the bird. Yet to many others the call is much more clearly represented by the syllables, "che-wink," even to the *n* and *k*, though some bird students insist that birds are incapable of uttering any true consonant sound. At any rate, the tone and accent of the call form a singular blend of cheerfulness and inquiry, albeit the quality is a bit nasal.

The bird's song, such as it is, consists of three notes, the first two strongly accented and the second lower by several tones than the first; these followed by several very rapidly uttered notes of the *same pitch* — not a "trill," as they often are described, since a trill is the rapid repetition of two notes of *different* pitch. There have been various efforts to reduce this song to syllables, for example, Seton's transliteration, *chuck-burr, pil-a-will-a-will-a-will*, and Thoreau's rendition, *hip-you, he-he-he-he*, which gives a close approximation to the vowel value of the syllables.

Something strangely like the ventriloquistic faculty seems to be possessed by not a few American birds, and probably many observers have noticed that the Chewink apparently employs it in a very marked degree, their persistence having been taxed to the utmost to locate a Chewink who sang at intervals of every ten or fifteen seconds for several minutes before he was finally discovered, usually in plain sight and not more than twenty-five or thirty yards distant.

This bird has two other peculiarities which distinguish it from most of its kind. One is its way of scratching on the ground, an operation in which it uses its feet alternately, after the manner of the domesticated hen. Indeed, the bird gets much of its food by this ground-foraging, incidentally making a commotion among the dry leaves which suggests the efforts of a much larger bird, or of a squirrel or woodchuck. Again, the Towhee is decidedly unlike other birds in its apparent nonchalance when its nest is approached. It may be dangerous to infer that this seeming indifference is deliberately assumed for the purpose of deceiving the intruder, yet it is difficult to account for it in any other way, for the bird betrays much solicitude once the nest is actually discovered.

The Cowbird seems to have a special preference for the nest of the Towhee and seems to choose the latter to bring up her young more often than she does any other species. Frequently two, three, and even four Cowbird's eggs have been found in a Chewink's nest, and occasionally five or six have been found. In the cases of the larger numbers the nest has generally been deserted as if the Chewinks felt that their good nature had been imposed upon too far. The eggs of the two species resemble each other, but the Cowbird's egg is more likely to be smaller and to lack the pinkish tint which is a usual characteristic of the Towhee's.

Photo by H. K. Job Courtesy of Nat. Asso. Aud. Soc.

MALE TOWHEE FEEDING YOUNG

The two with open mouths are Cowbirds

Wild fruits of all kinds, from strawberries and blackberries to wild cherries and grapes, are eagerly eaten by the Towhee. However, seeds and insects are its principal food. Beetles and their larvæ, ants, moths, caterpillars, grasshoppers, flies, and earthworms are destroyed by the Towhee. Although it cannot be classed as a decidedly useful bird, chiefly because of its haunts, there are no reports of its having damaged cultivated crops or caused loss of any kind to the farmer.

The White-eyed or Florida Towhee (*Pipilo erythrophthalmus alleni*) which is found on the Florida peninsula, is smaller than the common Towhee and has much less white on the wings and tail and its iris is brownish-yellow or yellowish-white instead of carmine-red.

OREGON TOWHEE

Pipilo maculatus oregonus *Bell*

A. O. U. Number 588b

Other Name.— Spotted Towhee.

General Description.— Length, 8 inches. Fore and upper parts, black; under parts, white and brownish. Wings, rather short and much rounded; tail, longer than wing, rounded, the feathers broad with compact webs and rounded tips; feet, stout.

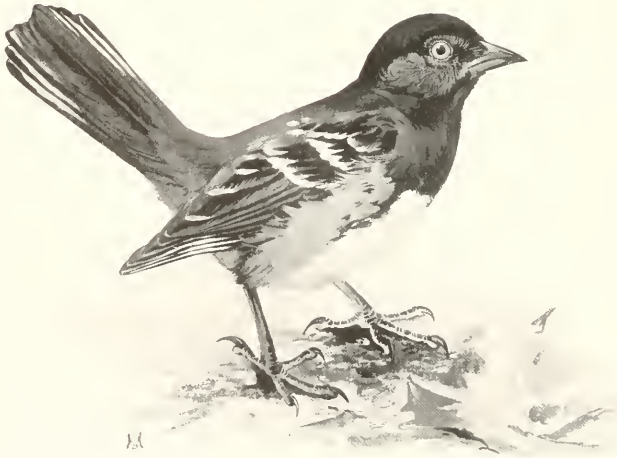
Color.— ADULT MALE: Head, neck, and chest, black, the throat with a white spot, and, very rarely, the back of head streaked with rufous; *upper parts, black*; middle and greater wing-coverts tipped with white, forming two spots; three to four outer tail-feathers with small terminal spaces of white, chiefly on inner webs; the outermost tail-feathers with the outer web edged with white; breast and abdomen, white; sides and flanks, cinnamon-rufous occasionally with dusky spots or bars; anal region and under tail-coverts, paler cinnamon-tawny or ochraceous buff; bill, black. ADULT FEMALE: Similar to adult male, but throat and chest dark sooty brown or sooty black; general color of upper parts, dark sooty brown.

Nest and Eggs.— NEST: In ground, rim sunk flush with the surface, usually near streams; a strong, well built structure of bark strips, grass, or pine needles, lined with grass. EGGS: 4 or 5, very pale greenish white, covered with spots and specks of chestnut and lavender.

Distribution.— Coast district of southern British Columbia, Vancouver Island, Washington, Oregon, and California, south to San Francisco Bay; winters south to southern California.

The group of Towhees, known as Spotted Towhees, and of which the Oregon Towhee is a member, are found in western United States and Mexico among the chaparral. They are very shy and simply refuse to stay where they can be observed; just as you hear one sing and catch sight of him on the top of a bush, he sees you and down he drops to the ground and starts scratching among the leaves under the bushes.

In southern California, in the coast district, and south into Lower California, is found the San Diego Towhee (*Pipilo maculatus megalonyx*). It is a deep glossy black with heavy white markings on the wings. The Arctic Towhee (*Pipilo maculatus arcticus*) has extensive white markings on both wings and tail and its shoulders are heavily streaked with white; it breeds in the plains and among the foothills of the Rockies from southern Alberta to west central Montana and northwestern Nebraska and winters from eastern Colorado and southern Nebraska to southern Texas. The Spurred Towhee (*Pipilo*



Drawing by R. Bruce Horsfall

OREGON TOWHEE (⅔ nat. size)

A scratcher among the fallen leaves

maculatus montanus), distributed from British Columbia south into Mexico and from eastern California to Wyoming, Colorado, New Mexico, and Western Texas, and the San Clemente Towhee (*Pipilo maculatus clementæ*), found on the San Clemente and other islands of southern California, have the white markings much restricted.

These Towhees are not numerous enough to inflict any great damage, no matter what their habits. Should they become very abundant they very likely would injure fruit, but they seem so shy and retiring that the more the country is cleared and put under cultivation the more likely they are to become rare.

About three-quarters of their food consists of vegetable matter. Fruit forms about 18 per cent. and is probably almost entirely wild or waste. Grain averages 4 per cent. for the year with the largest amount eaten after the harvesting season. Weed seed occupies the chief place on their menu and forms nearly 35 per cent. of their food for the year.

Apparently these Towhees do not care for grasshoppers as they form less than 2 per cent. of their food for the year and are eaten very irregularly. Weevils, tree-boring beetles, ants, wasps, bees, and the black olive scale make up most of their animal food.

CAÑON TOWHEE

Pipilo fuscus mesoleucus *Baird*

A. O. U. Number 591

Other Names.—Fuscous Towhee; Brown Chippy; Cañon Bunting.

General Description.—Length, 9½ inches. Upper parts, brown; under parts, white, brown, and black. Wings, rather short and much rounded; tail, longer than wing, rounded, the feathers broad with compact webs and rounded tips; feet, stout.

Color.—ADULTS: Above, hair-brown or pale grayish sepia-brown, the crown distinctly ruddy, inclining to cinnamon; middle and greater wing-coverts and upper tail-coverts, usually narrowly and indistinctly tipped with paler; wings and tail-feathers with the general color darker, clearer, and less brown than other portions; side of head, mainly colored like back, etc., but with pale buffy or dull whitish markings; cheek region, chin, and throat, pinkish buff (deeper in winter, paler in summer plumage), the first flecked with dusky, the nearly (sometimes quite) immaculate throat area surrounded by rather large triangular spots or streaks of black; center portion of breast and abdomen, white; sides of breast, sides, and flanks, brown (paler than back); anal regions and under tail-coverts, cinnamon or cinnamon-tawny; iris, brown.

Nest and Eggs.—NEST: Located in thickets or small mesquite trees, near ground, usually within 10 feet, sometimes in dense clumps of cholla or between yucca leaves; deep, large, but loosely constructed of coarse grass, lined with fine roots and horse- or cow-hair. EGGS: 3, speckled, scratched and scrawled with brown, black, or lavender.

Distribution.—Arid districts of Arizona, southern and eastern New Mexico, western Texas, eastern Colorado, and southwestern Colorado, south to northeastern Sonora and northwestern Chihuahua.

The Cañon or Fuscous Towhees form a numerous species that is distinguished by their fluffy brown Sparrow-like appearance. To the Easterner there seems to be less of the Towhee and more of the brown Sparrow about this common dooryard friend of the southwest. It is often called the Brown Chippy from the very persistence of the loud metallic *chip*, whether heard in the streets of towns or out in the dense chaparral and scrub bushes that line the mountain cañons. The flight song is a Robin-like *screep'-eep-eep*, and it has another squeaky but quiet and contented song. In the cañons at dusk a dozen or more of the Cañon Towhees sing this song in concert and the effect is like an evening hymn in a temple to nature's God.

There are many varieties of the Fuscous Towhee. The typical one is the Brown Towhee of the Pacific slope of central Mexico. Throughout California the variety is there known as the California Towhee or Crissal Bunting (*Pipilo crissalis crissalis*), the main distinction appearing to be a deeper colored head than the more eastern bird. Ridgway has seen enough differences in them to make the California Towhee a separate species, but Mrs. Bailey prefers to know them as mere varieties of the Fuscous Towhee. The Anthony Towhee (*Pipilo crissalis senicula*) of southern California is surely but a variety of the California, having darker upper parts and grayer lower parts.

Wherever found, the Fuscous Towhee has no fear of man, and when the breeding season comes the gloomy cañons resound with his songs.

ABERT'S TOWHEE

Pipilo aberti *Baird*

A. O. U. Number 592

Other Name.—Gray Towhee.

General Description.—Length, 9½ inches. Upper parts, brown; under parts, brown and yellowish. Wings, rather short and much rounded; tail, longer than wing, rounded, the feathers broad with compact webs and rounded tips; feet, stout.

Color.—ADULTS: Above, uniform rather light brown, becoming rather darker and somewhat grayer on wings and tail, the primaries edged with pale brownish gray; beneath, pale wood-brown, paler on breast, deeper and tinged with reddish cinnamon on throat and chest, the lower abdomen yellowish-buffy, the under tail-coverts still deeper, or reddish tawny; chin and throat, streaked with dusky. YOUNG: Above, olive-grayish streaked with dusky; under parts, grayish-white streaked on sides and chest with dusky; wings and tail similar to adults.

Nest and Eggs.—NEST: Usually, in dense chaparral thickets, willow, canebrake or mesquite clumps near streams, within five feet of ground, rarely in trees thirty feet up; rather large, carelessly made of bark strips, weed stalks, grass, twigs, lined with fine inner bark or horse-hair. EGGS: 2 to 4, pale blue, thinly marked or spotted around large end, sometimes over the entire surface, with dark umber-brown and black.

Distribution.—Arid division of Arizona, southern Nevada (bend of Colorado River), southwestern Utah, northwestern New Mexico and southeastern California; south in winter to northern Lower California.

Despite the fact that the Abert's Towhee is the largest of the plain Towhees he is extremely shy. He lives among the mesquites and cotton-woods of the desert region of Arizona, New Mexico, and southeastern California. His note of alarm is *huit huit* according to Bendire.

GREEN-TAILED TOWHEE

Oreospiza chlorura (*Audubon*)

A. O. U. Number 592.1

Other Names.—Chestnut-crowned Towhee; Green-tailed Bunting; Blanding's Finch.

General Description.—Length, 8 inches. Upper parts, greenish; under parts, white and gray. Bill, small; wings, long and pointed; tail, long, equal to or longer than wing, rounded.

Color.—ADULTS: Crown and back of head, plain rufous or cinnamon-rufous; forehead and sides of head, deep gray or olive-gray; hindneck, back, shoulders, rump, and upper tail-coverts, olive-grayish tinged with yellowish olive-green; wings and tail, mainly yellowish olive-green, the greater wing-coverts and inner wing-quills, duller and grayer; edge of wing, canary-yellow; chin and throat, white forming a sharply defined patch; chest, sides of neck, and sides of breast, gray becoming gradually paler on breast; the abdomen, white; sides and flanks, buffy grayish; under tail-coverts, light buff; iris, cinnamon or reddish. YOUNG: Crown, hindneck, back, and shoulders light olive or grayish brown, streaked with dusky; under parts dull whitish, the chest and sides streaked with dusky; wings and tail as in adults, but middle and greater wing-coverts indistinctly tipped with brownish buffy.

Nest and Eggs.—NEST: Placed in bush, amid shrubbery or on ground, sagebrush, chaparral, mesquite, or cactus preferred; constructed of fine twigs, grass, shreds of bark, lined with fine grass. EGGS: 4, white, pale greenish or grayish white, freckled all over with fine specks of bright chestnut.

Distribution.—Mountain districts of western United States, from more eastern Rocky Mountain ranges to Coast range of California; north to central Montana and Idaho and eastern Washington; south to southern California, southeastern New Mexico, western Texas, and, at least in winter, to middle Mexico, and to southern Lower California; accidental in Virginia.

The Green-tailed Towhee is a beautiful bird with a soft glossy coat touched off with yellowish green and his manners are so gentlemanly that he quickly wins his way to our hearts. "He may generally be found perched on top of a bush and at sight of you will raise his rufous cap inquiringly, turning to look down so that his white chin shows to advantage. When seen hopping over the ground he is as trim as a Song Sparrow, looking about and flashing his green tail till he disappears to scratch in the brush." (Mrs. Bailey.)

This Towhee has the peculiar trait of running along the ground when he is surprised instead of taking wing. His song has many of the characteristics of Finch songs but is phrased like that of the Cañon Towhee. His call note is very similar to that of the Chewink.

CARDINAL

Cardinalis cardinalis cardinalis (*Linnæus*)

A. O. U. Number 593. See Color Plate 85.

Other Names.— Cardinal Grosbeak; Redbird; Crested Redbird; Virginia Redbird; Virginia Nightingale; Virginia Cardinal; Kentucky Cardinal; Cardinal Bird.

General Description.— Length, 8¾ inches. Male, red; female, partly red, giving an appearance of being faded. Bill, stout; wings, short and rounded; tail, longer than wing, slightly rounded; head with conspicuous crest.

Color.— ADULT MALE: Front portion of forehead, front part of cheek region, chin, and throat, black, forming a conspicuous cap entirely surrounding the bill; rest of head, vermilion-red, duller on crown (including crest); under parts, pure vermilion-red becoming slightly paler posteriorly, the flanks slightly tinged with grayish; hindneck, back, shoulders, rump, and upper tail-coverts, dull vermilion-red; wings and tail, dull red; bill, red-orange; iris, deep brown. ADULT FEMALE: Wings and tail, much as in the male, but the red duller; red of head and body replaced above by plain grayish olive or buffy grayish, the crest partly dull red, below by pale fulvous or buffy (nearly white on abdomen), the chest often tinged or mixed with red; head, dull grayish, sometimes nearly white on throat.

Nest and Eggs.— NEST: Located in thickets of brambles or grapevines or low saplings; a carelessly constructed, loosely put together affair of small twigs, strips of bark, weed stems, grass, lined with fine rootlets, and horse-hair. EGGS: 2 to 4, white, bluish, or greenish white marked with shades of chestnut, purple, and brown, usually scattered over entire surface.

Distribution.— Eastern United States; north, regularly and breeding to southeastern New York, lower districts of eastern Pennsylvania, western Pennsylvania, northeastern Ohio, northern Indiana, southern Iowa, etc., casually or irregularly to Connecticut, Massachusetts, Maine, Nova Scotia, southern Ontario, southern Michigan, southern Wisconsin, and Minnesota; west to edge of Great Plains, casually to eastern Colorado; south to Georgia, Alabama, and upland region of Gulf States; Bermudas (introduced and naturalized).

The flash of red that comes to view and disappears in other trees is generally the Cardinal. There are other red birds, but none that frequent the stately Southern elms and other large roadside trees as does this most attractive Sparrow.

All through the Southern plantation country this is the bird that typifies everything that is elegant and chivalric not only to the colored cotton pickers and plantation laborers, but to the country gentlemen. Novels have been written in which the Virginia Cardinal and the Kentucky Cardinal and the Carolina Cardinal have given a tone of aristocratic elegance to the plots. The bird is indeed a fine specimen of bird character, whether found on a Southern plantation, or at its northeastern limit in Central Park, New York city, or at its western limit in the dingy chaparral of southern Arizona.

The bird is ever cheerful and active and industrious. The young are cared for eagerly by the male while the female is sitting on a second laying of eggs. Nothing daunts the male in his care of the young that he leads out upon the lawns and berry fields. The search for food, the scent of danger, and the warnings given to the heedless young are common observations made by people who are attracted to them.

The attention the male gives his mate is very noticeable. He is never fearful to fly about looking after the nest or leading her to some favored food or singing to her from far up in the tallest tree while she is busy at her toilet down by the brook in the valley. And frequently she will answer in a lower note that

Courtesy of Am. Mus. Nat. Hist.

CARDINAL (¼ nat. size)

A flash of red, coming to view one moment, and disappearing the next

brings from him a quick response. There is a remarkable charm in the Cardinal that brings words of enthusiasm from all who have lived in

the country with him and have watched his gracious ways.

His call is a rich and rounded *cue-cue* that penetrates the grove and often brings an answering *cue-cue* from another bird far away. The rapid *hip-ip-ip-ip-ip-ip-ip*, uttered without any loss of power at the end, rings out clear from the tops of the trees and seems to rouse the echoes. Then there is the long drawn out *c-eee*,

Photo by H. T. Middleton

YOUNG CARDINAL

and the *cheer, cheer, cheer* that makes one feel a joy in having such a bird in the neighborhood.

Ridgway has listed about a dozen varieties of the Cardinal but they are mostly in Mexico. Only the Florida (*Cardinalis cardinalis floridanus*) and Arizona (*Cardinalis cardinalis superbus*) and the Gray-tailed (*Cardinalis cardinalis canicaudus*) occupy small areas adjacent to the great areas of the true *Cardinalis* east of Texas and south of the Hudson and the Great Lakes. The Gray-tailed Cardinal is but one of the Mexican varieties that extends up into Texas. But wherever found the Cardinal is a rare sight. Many persons have become much interested in all birds by being first interested in the Cardinal. Some have called him an FFV (member of one of the first families of Virginia). Better yet, he is an FF of America. L. Nelson Nichols.

It has been claimed that the Cardinal pulls sprouting grain, but no evidence of damage to either grain or other crops is afforded by the examination of more than 500 stomachs. On the other hand, the evidence is ample that he does much good. The Redbird is known to feed on the Rocky Mountain locust, periodical cicada, and Colorado potato beetle. It is a great enemy also to the rose chafer, cotton worm, plum or cherry scale, and other scale insects, and attacks many other important insect pests, including the zebra caterpillar of the cabbage, the cucumber beetles, billbugs, locust flea-beetle, corn-ear worm, cotton cutworm, southern fig-eater, codling moth, and boll weevil. In addition, it consumes a great many seeds of injurious weeds. Thus its food habits entitle the bird to our esteem, as its brilliant coat and spirited song compel our admiration.

ARIZONA PYRRHULOXIA

Pyrrhuloxia sinuata sinuata (*Bonaparte*)

A. O. U. Number 594

Other Names.— Bullfinch; Bullfinch Cardinal; Gray Grosbeak; Gray Cardinal; Parrot-bill.

General Description.— Length, 9 inches. Plumage, grayish, with red crest and tail. Bill, short, thick, and strongly curved; wings, short and much rounded; tail, decidedly longer than wing, rounded.

Color.—Adult Male: Above, brownish gray or grayish hair-brown becoming purer gray (between drab-gray and smoke gray) on head and neck; all the wing-feathers with concealed bases, dusky red; outer webs of primaries and primary coverts, mostly dull red; middle tail-feathers, dusky brownish becoming dark dull reddish in the center and edged with brownish gray; rest of tail-feathers, dull red becoming dusky brownish at the ends, the shafts of all, black on upper surface; longer feathers of crest, dull red; *forehead, chin, throat*, and other center lower parts, thighs, and most of under side of wing, *pure red* (geranium-red to poppy-red), the lores and eye region, duller red; sides of under parts, light brownish gray, paler and tinged with buffy posteriorly; bill, yellowish in summer, horn colored in winter; iris, brown. Adult Female: Similar to adult male, but lacking the red of face and center under parts (or with it but slightly indicated), the general color of the under parts of a decided buffy hue; bill, yellow in summer, grayish brown in winter.

Nest and Eggs.— Nest: In mesquite, or thorny thickets; resembles that of the Cardinal but more compactly put together and smaller; made of bark strips, twigs, grass, lined with small roots. Eggs: 3, pale bluish white spotted with different shades of brown and lavender, wreathed around large end.

Distribution.— Northwestern Mexico; southern portions of Arizona, southwestern New Mexico, and extreme western part of Texas.

ROSE-BREASTED GROSBEAK *Zamelodia ludoviciana* (Linnaeus)
ADULT MALE
IMMATURE MALE IN AUTUMN
FEMALE

CARDINAL *Cardinalis cardinalis cardinalis* (Linnaeus)
FEMALE
MALE

All ¾ nat. size

The Pyrrhuloxia belongs to the Cardinal group of Finches. Their habits are those of the Cardinal, but the area in which they are found is but a small part of the country in which the true Cardinals live. The Pyrrhuloxia country is confined to the hot upland areas of the northern plateau of Mexico, and the adjacent parts of Arizona, New Mexico, and Texas.

Some suppose the Pyrrhuloxia to be more "shy and suspicious" than the Cardinal. But the experience of William L. and Irene Finley in photographing a Pyrrhuloxia on the nest, as reported in *Bird-Lore*, is rather the reverse, showing that the bird has about the same confidence in human surroundings as has the Cardinal. The Cardinal traits have been so noticeable that the bird has often been known as the Gray Cardinal. The differences are also conspicuous. Instead of the *cue* note of the Cardinal, the mesquite is musical with his clear, cheerful whistling.

The red crest is the most characteristic feature of the Pyrrhuloxia. Every change of mood in the bird is not only shown but exaggerated by the quick up and down motions of the crest feathers. From listlessness to alertness, and from curiosity to ennui are the changes of a second. These changes are rapid and occur many scores of times every hour.

The eastern variety is called the Texas Pyrrhuloxia (*Pyrrhuloxia sinuata texana*) and has the ring around the bill conspicuously marked with black. From El Paso west into southern Arizona the variety is known as the Arizona Pyrrhuloxia. It is a very fancy name, but it will remain, for it is a very fancy bird.

Like the Blue Grosbeak the Arizona Pyrrhuloxia is more fond of caterpillars and grasshoppers than of other insects. Weevils are next in order of preference. The Parrot-bill ranges over much of the cotton belt of Texas and feeds upon two important cotton pests, one of which — the boll weevil — is one of our most destructive insects. Cotton worms are highly relished, as many as eighteen having been found in a single stomach. In August and September seven-tenths of the Gray Grosbeak's food is weed seed, five-tenths consisting exclusively of the seeds of two of the most important weeds of the South, namely, foxtail and burr grass. So far as known, the Gray Grosbeak eats practically no beneficial insect and damages no crop. This, in addition to the fact that it feeds upon noxious weed and insect pests, entitles it to complete protection.

Drawing by R. I. Brasher

PYRRHULOXIA (⅔ nat. size)

A fine whistler, with a red waistcoat and a very dandified air

ROSE-BREASTED GROSBEAK

Zamelodia ludoviciana (*Linnæus*)

A. O. U. Number 595 See Color Plate 85

Other Names.— Potato-bug Bird; Common Grosbeak; Summer Grosbeak; Rose-breast.

General Description.— Length, 8¼ inches. Fore and upper parts, black or blackish-brown; under parts, red and white. Bill, heavy and short; wings, long and pointed; tail, more than ¾ length of wing, even or slightly rounded, the feathers broad and rounded at the ends.

Color.—Adult Male in Summer: Head, neck, back, and shoulders, uniform black; wings, black relieved by a large patch of white on basal portion of primaries, white spots at tips of innermost greater coverts and inner wing-quills, and a broad white band composed of the middle coverts; upper tail-coverts, black with large terminal spots of white; tail, black with inner webs of three outermost tail-feathers white at the ends; *chest, center portion of breast, and under wing-coverts, rose red or light carmine; rest of under parts of body,*

white, the rump, also white; iris, brown. ADULT MALE IN WINTER: Wings, tail, and upper tail-coverts as in summer; head, neck, back, and shoulders, brown streaked with black, color of head relieved by a center crown-stripe, a stripe over eye, and a cheek stripe of pale buffy or buffy whitish; under parts, brownish white, the chest, sides, and flanks streaked with dusky, the first tinged or suffused with rose-red or rose-pink. YOUNG MALE IN FIRST WINTER: Similar to the adult male in winter, but wings, upper tail-coverts, and tail, grayish brown, instead of black, the last without any white, the first with the white markings much reduced and tinged with brown; back and shoulders, more uniformly brown; chest, sides, and flanks, more deeply fulvous and more heavily streaked, the first with little, if any, red or pink; under wing-coverts and axillaries, rose-pink. ADULTS FEMALE (SUMMER AND WINTER): Much like the young male, but wing-coverts yellow.

Nest and Eggs.— NEST: In low trees and bushes, sometimes on such slender branches that the eggs roll out when the support is bent by a strong breeze; a flat, rather carelessly made saucer-shaped structure of small twigs, wiry rootlets, and grass. EGGS: 3 to 5, greenish blue, spotted and blotched over entire surface with chestnut and shades of brown.

Distribution.— Eastern United States and more southern British provinces, from Atlantic coast to edge of the Great Plains (eastern Kansas to Manitoba); breeding from New Jersey, Pennsylvania, northern Ohio, northern Indiana, northern Illinois, Iowa, and eastern Kansas, north to Manitoba, Ontario, Nova Scotia, etc., and south along the Allegheny Mountains to western North Carolina (3500 to 5000 feet); in winter south to Bahamas, Cuba, Jamaica, and through Mexico and Central America to western Ecuador; casual in Bermudas.

There is no bird in our eastern American avifauna that is better worth an acquaintance than the Rose-breasted Grosbeak. Some birds force themselves upon our attention; we have to go to find the Rose-breast for he is nowhere common. Some birds have commonplace voices, but the Rose-breast has a rich and mellow voice that rings out with abundant vitality in the bush lot at the edge of the forest or across the bushy swamp. Many birds seem to ask for exaggerated

ROSE-BREASTED GROSBEAK (⅔ nat. size)
He is an efficient, resourceful, and virile American
Drawing by R. I. Brasher

description because of their extraordinary beauty. The Rose-breast is a handsome bird in his black and white and rose, much handsomer than most Finches, but not so beautiful as to distract the observer from the life and habits of the bird. And this, the character of the bird, is the finest thing about him.

Almost all observers are impressed with the vital wholesomeness of this Grosbeak. He is seldom nervous and seldom allows trivial things to disturb him. He acts with dignity and yet with a quickness and precision and quiet forcefulness that are almost ideal. As a caged bird he puts up with what he has to and makes the most of what he has. He is a very clean bird. The nest is always clean. Wherever he goes he makes no litter, and whatever he breaks up for food is never scattered, but the remnants remain in small inconspicuous piles. It would almost seem as though the bird had a conscience, and knew what it was to be a gentleman.

Cardinal-like, the male has a great attachment for his mate while she is at the nest. He has been seen standing a few feet away as though glad to be in her company. Sometimes he will sing for her for a long time in a nearby tree. And someone has said that he has carried potato bugs to feed her on the nest. When the young have left the nest his presence with them is very noticeable. Generally silent during these busy weeks, he seems to be the embodiment of good cheer, happier, indeed, it would seem than the scared youngsters that watch his every action as though only in him could they feel any safety in this blood-thirsty world.

Whoever cares to know this really high-class American must go out to his distant haunts. One might happen to see him high up in an elm that shades the highway, or quietly purloining the farmer's crop of potato bugs, or flying sturdily beside a country road "going somewhere," never flying for the sake of flying as do most of the nervous birds. Make a special journey to the wood lot where he lives and spend a morning in his company. You will go home with the feeling of having met one of the best types of efficient, resourceful, and virile Americans.

L. Nelson Nichols.

The Rose-breasted Grosbeak is held in high esteem because of his habit of preying upon the Colorado potato-bug. At least one-tenth of his food is made up of these potato-eating beetles. He is almost the only bird to feed upon these pests; he not only eats the adults but also consumes the larvæ and feeds a great many to the nestlings. Cucumber beetles, canker worms, tent caterpillars, army worms, cutworms, chinch bugs are all greedily sought for.

The vegetable food of this Grosbeak consists of buds and blossoms of forest trees and seeds. He is accused of injuring orchards by eating the blossoms and the fruit and of eating green peas. He does do both of these things, but the little damage he does in this way is more than off-set by his raids on the potato-bug. Mr. Beal examined the stomachs of some Rose-breasted Grosbeaks which had been killed in the very act

Photo by A. A. Allen

ROSE-BREASTED GROSBEAK, HER NEST, AND EGGS

of eating peas. He found a few peas, but there were more than enough potato-bugs to pay for all the peas the birds would have been likely to eat for a whole season. The garden where this took place adjoined a small potato field which earlier in the season had been so badly infested with beetles that the vines were completely riddled. Every day the Grosbeaks had visited the field and after the young left the nests they accompanied their parents. The babes stood in a row on the topmost rail of the fence and were fed with the beetles by the old birds. A careful inspection was made a few days later but not a single potato-bug remained; the birds had saved the potatoes.

BLACK-HEADED GROSBEAK

Zamelodia melanocephala (*Swainson*)

A. O. U. Number 596

Other Names.— Western Grosbeak; Black-head.

General Description.— Length, 8¼ inches. Upper parts, black and tawny; under parts, buffy-cinnamon and lemon-yellow. Bill, heavy and short; wings, long and pointed; tail, more than ¾ length of wing, even or slightly rounded, the feathers broad and rounded at the ends.

Color.— ADULT MALE: Head, black, the throat light cinnamon-ocher or tawny; wings, upper tail-coverts, and tail, black, the first varied by a broad band of white including the middle coverts, a large white patch on basal portion of primaries, and white spots at tips of greater coverts and inner wing feathers, the last by large white spaces on terminal portion of inner webs of two to three outermost tail-feathers; upper tail-coverts with white terminal spots; collar across hindneck, throat, chest, breast, sides, flanks, and rump, uniform buffy-cinnamon or tawny; *abdomen and under wing-coverts, clear lemon-yellow;* anal region and under tail-coverts, white; shoulders, black centrally, edged or margined with light tawny or cinnamon-buffy; iris, dark brown. ADULT FEMALE: Above, dusky grayish brown or olive, streaked, especially on back and along center line of crown, with pale tawny, buffy, or whitish; wings and tail, grayish brown, with white marking much more restricted than in adult males, those on tail nearly if not quite obsolete; chin, sides of throat, cheek region, and a stripe over the eyes, whitish; chest, pale fulvous, cinnamon-buffy, or yellowish buffy; abdomen, usually pale yellow, sometimes white.

Nest and Eggs.— NEST: Located among willows, live oaks or saplings, from five to twenty feet up; a loosely put together, frail structure of fine twigs, weed stems, grass, and rootlets. EGGS: 3 or 4, bluish green, speckled and blotched with chestnut and rufous brown.

Distribution.— Western United States and plateau of Mexico; north in summer, to British Columbia, Idaho, Montana, etc., east to southeastern Dakota, eastern Nebraska and eastern Kansas; breeding south to southern portion of Mexican plateau.

The Black-headed Grosbeak may be used as a striking illustration of the theory of evolution. It resembles the Rose-breasted Grosbeak closely in structure, form, and habits; its notes are almost the same, yet in plumage it differs widely, but still shows relationship. What better evidence is needed to indicate that the two species were once one, and that the only noticeable difference between them that is observable to-day was caused by climatic influences? The pure warbling song of the Black-head as well as its thin alarm note may be recognized, when heard for the first time, by their close resemblance to those of its eastern prototype. The two species seem to show similar tastes in regard to food, as the Black-head attacks the potato beetle and the buds of trees with the same avidity that is shown in the east by its congener. Even the nest and eggs resemble those of the Rose-breast, although in the southern part of its range the Black-head's nest is exceedingly flimsy, so that in some cases the eggs may be seen through it from below.

Apparently the species is more prolific than the Rose-breast, which ordinarily rears but one brood annually. The Grinnells in their *Birds of Song and Story* tell of a pair of Black-heads that raised three broods in their garden, but the glorious climate of California which tends to induce fecundity may be responsible for this.

The male Grosbeak is a handsome bird, startlingly flashy in flight, with its contrast of black, white, and yellow, but is a little coarse or heavy in form. Its big beak, like a huge nose, reminds us of the story of little Red-Riding Hood and the wolf, for it is almost as prominent as the wolf's muzzle, which as a counterfeit grandmother's nose so astonished the child when seen protruding from the depths of the frilled nightcap.

The male like that of the Rose-breast is a good father and relieves his mate on the nest, taking his share of the duties of incubation and chick-rearing. He keeps the nest during a large part of the day and the female takes his place by night: thus the eggs are constantly kept covered and defended.

The Black-headed Grosbeak is a bird of the forest but like its eastern relative it seems to prefer for nesting a place in deciduous woods and shrubbery, especially among the alders along small streams; but when assured of protection it comes as freely about the dwellings of man as does the Rose-breast and even nests in the fig trees. The male pours forth his pure and tender rhapsody from the heights of tall oaks or pines, but does not disdain to sing even while hunting the lowly "potato-bug." Through the long day he sings, even at hot high noon when other less virile songsters are resting and silent.

EDWARD HOWE FORBUSH.

The Black-headed Grosbeak fills the same place in the West that the Rose-breast does in the East, and economically is fully as important. In parts of its range it is destructive to early fruit and attacks also green peas and beans. However, since by proper precautions such losses may be minimized or altogether prevented, they should not be given too much weight in estimating the value of the bird. Instead of being regarded as an enemy by western orchardists, the Black-head should be esteemed as a friend, since it is a foe to the worst pests of horticulture — the scale insects — which compose a fourth of its food. The black olive scale alone constitutes a fifth of the bird's subsistence, and the frosted scale and apricot scale, or European fruit lecanium, also are destroyed. In May considerable numbers of canker worms and codling moths are eaten, and almost a sixth of the bird's seasonal food consists of flower beetles, which do incalculable damage to cultivated flowers and to ripe fruit. For each quart of fruit consumed by the Black-headed Grosbeak it destroys in actual bulk more than one and one-half quarts of black olive scales, one quart of flower beetles, besides a generous quantity of codling moth pupæ and canker worms. So effectively does it fight these pests that the necessity for its preservation is obvious, while most of its injury to fruit is preventable.

Drawing by R. Bruce Horsfall

BLACK-HEADED GROSBEAKS (½ nat. size)

BLUE GROSBEAK

Guiraca cærulea cærulea (*Linnæus*)

A. O. U. Number 597 See Color Plate 86

Other Name.— Blue Pop.

General Description.— Length, 7¾ inches. Male, blue; female, olive-brownish above and brownish-buffy below. Bill, large, conical, compressed, with nearly straight outlines; wings, long and pointed; tail, about ¾ length of wing, nearly even or very slightly rounded.

Color.—Adult Male: Uniform, slightly glossy, dull ultramarine blue, the feathers of the back dusky centrally; a narrow black spot on crown involving the forehead, the extreme front portion of cheek region, and chin; wings and tail, blackish with dull bluish edgings, the middle wing-coverts with most of the exposed portion, chestnut or cinnamon-rufous (forming a broad band), the greater coverts margined at the ends with the same or a paler color (forming a much narrower band), under tail-coverts margined with white, especially at tips; iris, brown. Adult Female: Above, olive-brownish tinged with tawny, passing into a decidedly more grayish hue (usually tinged with blue) on rump and upper tail-coverts; shoulders darker centrally, forming indistinct streaks; wings and tail, dusky, the latter with dull grayish blue, the former with light brownish edgings; middle wing-coverts, rather broadly tipped with light cinnamon-rufous or tawny and terminal margins of greater coverts usually tinged with the same; under parts, brownish-buffy or clay color, deepest on chest, paler on throat and abdomen.

Nest and Eggs.— Nest: Placed in low brambles, or in deciduous trees as far as thirty feet from the ground; a compact, well built structure of dried grass, plant fibers, leaves, with an intertwined cast-off snake skin; lined with fine brown rootlets and horse-hair. Eggs: 3 or 4, plain light bluish white.

Distribution.— More southern portions of eastern United States, chiefly near Atlantic and Gulf coasts; north regularly, but very locally, to Pennsylvania, New Jersey, Kentucky, and southern Illinois; accidentally to Maine, eastern Massachusetts, Province of Quebec; in winter south to Cuba and Yucatan.

The Blue Grosbeak is an interesting bird of the Southern States. He is not quite so handsome nor has he such interesting notes as the Cardinal and the Rose-breast. And he is not as well known as those distinguished relatives, for nowhere is he common. In short trees and bushes from Maryland to the Gulf coast he may be found probably as often as anywhere. The blue is not so blue as to attract attention. The color is so dark that in certain lights the bird might be mistaken for a Cowbird. He is a very quiet bird. The evidence available would seem to make him more suspicious of man than is the Rose-breast.

Drawing by R. I. Brasher

BLUE GROSBEAK (½ nat. size)

You will have to look closely to see the "blue" in this bird's plumage

His song is a weaker effort than the Rose-breast's. It is a rather sweet warble of the Purple Finch nature, and has sometimes been called a beautiful song. No doubt this rare bird far away from the human ear pours forth a very sweet melody to his mate, but no one has yet given a biography of this interesting bird as has been done of his near relatives, the Cardinal and Rose-breast.

The territory of the Blue Grosbeak extends entirely across the southern half of the United States; but west of Louisiana there are so many differences in coloration of the bird that the scientists have made of them a separate variety, the Western Blue Grosbeak (*Guiraca cærulea lazula*). Ridgway is not at all sure that there is but one variety in the Southwest. The Utah and California birds differ from the Arizona birds, and they from the Texas birds. The western is paler colored; and bird observers in those areas seem to know the bird better than do those of the East, showing that his haunts are nearer the homes of men. Even there his haunts are most often along the rushing streams in the brush of the cañons of the foothills.

Blue Grosbeaks do no damage during the nesting period, and, in fact, are of great value to any farm they choose for a home, since they eat large numbers of injurious insects and feed their young exclusively upon them. In certain localities, however, after the breeding season, Blue Grosbeaks collect in flocks, move into grain fields, particularly those of oats and rice, and sometimes do considerable harm. Despite such depredations, the loss of cereals is repaid many fold, since the birds consume almost five times as much insect food as grain. Moreover, some of the insects they devour are especially destructive, such as weevils. More than a fourth of the seasonal food is composed of grasshoppers, including the lesser migratory locust. A tenth of the subsistence is made up of caterpillars and cotton cutworms, enemies of sugar beets and cotton. Because of its effective warfare on these pests, the Blue Grosbeak is an efficient ally of the farmer and deserves to be protected.

INDIGO BUNTING

Passerina cyanea (*Linnæus*)

A. O. U. Number 598. See Color Plate 80.

Other Names.— Indigo Bluebird; Indigo Painted Bunting; Indigo Bird; Indigo Finch; Blue Finch; Blue Canary.

General Description.— Length, 5¾ inches. Male, blue; female, olive-brownish above and dull white below. Bill, small; wings, long and pointed; tail, about ¾ length of wing, slightly double rounded.

Color.—ADULT MALE: General color, plain cerulean blue, changing to bluish green in certain lights, the head more purplish blue, this extending down the foreneck and, usually, strongly tingeing the center under parts of the body; lores and central (mostly concealed) portion of wing-coverts and inner wing-quills, black; secondaries, primaries, primary coverts, dusky edged with greenish-blue; iris, brown. ADULT FEMALE: Above, olive-brownish, lighter, and sometimes tinged with greenish-gray on rump and upper tail-coverts; beneath, dull whitish washed or tinged with olive-buffy on chest, sides, and flanks, the chest distinctly streaked with dusky grayish-brown; wings and tail, dusky, the lesser wing-coverts and edges of primaries and tail-feathers, grayish-greenish, the tips of middle coverts brownish. YOUNG: Similar to adult female, but averaging rather browner, especially on under parts, the back sometimes, especially in first plumage, obsoletely streaked.

Nest and Eggs.— NEST: Generally in a low viburnum, witch-hazel, or maple saplings, or other small bushes, or in brambles on brushy hillsides or open clearings near woods; usually in a fork, within five feet of ground; constructed of grasses, leaves, weed stalks, strips of bark, plant fibers, lined with finer grasses and hair. EGGS: 4, plain pale bluish white.

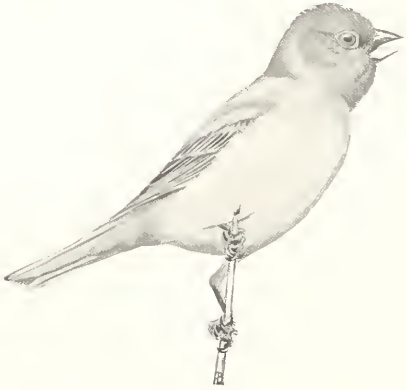
Distribution.— Eastern United States and British provinces; north to Maine, Ontario, Minnesota, etc. (casually to New Brunswick); south in winter to Bahamas, Cuba, and through eastern Mexico and Central America to Panama; west to eastern border of Great Plains, casually to eastern Colorado.

The Indigo Bunting is another bird with a distinct personality. No other bird attracts quite the peculiar attention that this bird does. To get acquainted with him one must be prepared for surprises, and what they all are will not be told here.

The male has such a peculiar color; no bird outside of the tropics has such a peculiar blue as the male Indigo Bird. It isn't an indigo color but rather a deep ultramarine blue. Just as you have made up your mind that that is the right name of the color, you get the bird in a different light and behold he is grayish blue, or azure-blue, or maybe olive-blue. At least there is no confusing him with any other bluish bird. The female, however, is one of the persistently confusing birds to bird students. She has a characteristic *cheep* and twitches her tail from side to side, but in coloring she is a plain little brown-striped Sparrow. There isn't a single distinctive feature that is apt to strike one's eye with a surety that will allow even the most accurate observer to determine on the instant the name of the bird. Most observers see the male in the neighborhood, and by a process of exclusion will decide that the little brown bird is also an Indigo Bunting.

The male is one of the most showy of birds and is not afraid to exhibit himself on a fence rail, or tilting on the reeds, or dodging about in a flock of English Sparrows, or up on a bush or short tree within easy view. The female is suspicious, secretive, silent, and sometimes as hard to see as a mouse in a thicket.

Yet another surprise. The Indigo Bunting seems so busy feeding and going in and out of thickets on some mysterious errands, that he doesn't seem to have much time to sing, while the other birds are doing their best in May and June. Wait till the other birds decrease the volume and intensity of their singing in July, or



Drawing by R. I. Brasher

INDIGO BUNTING (¼ nat. size)

"As blue as an Indigo bag" applies to this bird's plumage, but not to his disposition

stop entirely; then the Indigo Bunting begins to take an interest in his voice. The summer heat makes the Robin open his bill in the shadow to gasp for breath. The Bobolink is off for the marshes to keep cool. The Song Sparrow hides in the bushes till the extreme heat of the day is over. But the Indigo Bird is never daunted by the heat of July and August days. Many and many a highway can be traversed in the heat of the day without hearing one bird utter even a short note, except the Indigo Bird. He sings from the top of a bush or a short tree or a telephone pole or on the very topmost tiny twig of the very tallest tree in the neighborhood and with the greatest glee "he loudly sings his roundelay of love." The persistence, almost by the hour, of the sweet simple song is one of the surprises of the bird. So far up against the blue he sometimes is that not only color is lost but even his form is often too vague to be identified. The baking hot sun even quiets many of the insects, yet there come the notes of the Indigo Bunting tumbling down from far up in the sky. He certainly has the field all to himself.

Mrs. Bailey gives an interesting account of an Indigo Bird. "I well remember watching one Indigo Bird, who, day after day, used to fly to the lowest limb of a high tree and sing his way up from branch to branch, bursting into jubilant song when he reached the topmost bough. I watched him climb as high into the air as he could, when against a background of blue sky and rolling white clouds, the blessed little songster broke out into the blithest round that ever bubbled up from a glad heart."

Follow the life of the bird as long as he remains in our northern clime, and very many surprising things will be found out about him. Instead of being one of the many species of the large Sparrow family, it would seem that he might be given a scientific family name all to himself. L. Nelson Nichols.

The Indigo Bird is one of our most valuable species and should be given rigid protection. His food consists mainly of seeds and berries with a goodly number of insects. Among the insects are found caterpillars, click-beetles, snout-beetles, chafers, bugs of various kinds, and canker worms. In an orchard that was infested with canker worms the Indigo Bird was found eating more than its usual amount of these pests, some stomachs showing as much as 78 per cent. of canker worms.

LAZULI BUNTING

Passerina amœna (*Say*)

A. O. U. Number 599

Other Name.—Lazuli Painted Bunting.

General Description.—Length, 6 inches. Male, blue above and tawny and white below; female, brown and blue above and buffy below. Bill, small; wings, long and pointed; tail, about ¾ length of wing, forked.

Color.—Adult Male: Head, neck, rump, and upper tail-coverts, light cerulean or turquoise blue, changing to light greenish-blue (Nile blue); back, shoulders, and lesser wing-coverts, darker and (especially back) duller blue; middle wing-coverts, very

Drawing by R. I. Brasher

LAZULI BUNTING (½ nat. size)

A handsome songster of the western mountains and valleys

Courtesy of the N. Y. State Museum

BLUE GROSBEAK *Guiraca caerulea caerulea* (Linnaeus)

ADULT MALE

CHANGING MALE

FEMALE

INDIGO BUNTING *Passerina cyanea* (Linnaeus)

MALE IN SUMMER

FEMALE

MALE IN AUTUMN

All 2/3 nat. size.

broadly tipped with white, the greater coverts more narrowly tipped with the same, forming two bands; wings, otherwise blackish; tail, blackish; chest, tawny-ochraceous; abdomen, under tail-coverts, etc., white; iris brown. ADULT FEMALE: Above, grayish-brown passing into dull greenish-blue, or much tinged with this color, on rump and upper tail-coverts, the back sometimes streaked with dusky; wings and tail, dusky, the feathers edged with dull greenish-blue; under parts, dull buffy.

Nest and Eggs.— NEST Usually located near water, in low willows, weeds, manzanitas, or other brush; constructed of grass, leaves, strips of bark, small twigs, and rootlets, lined with fine grasses and hair. EGGS: 3 or 4, plain pale bluish or greenish white.

Distribution.— Western United States and British provinces; north to British Columbia, Idaho, Montana, etc.; south (in winter) to Mexico; east nearly or quite across the Great Plains to South Dakota, Kansas, etc.

"The Lazuli-painted Finch should be called the Blue-headed Finch; for the exquisite blueness of his whole head, including throat, breast, and shoulders, as if he had been dipped so far into blue dye, is his most distinguishing feature. The Bluebird wears heaven's color; so does the Jay and likewise the Indigo Bird; but not one can boast the lovely and indescribable shade, with its silvery reflections, that adorns the Lazuli. Across the breast, under the blue, is a broad band of chestnut, like the breast color of our Bluebird, and back of that is white, while the wings and tail are dark. Altogether he is charming to look upon." Thus Olive Thorne Miller describes the Lazuli Bunting.

The Lazulis are close relatives of the Painted Bunting; but they are much more shy, except in districts where they are numerous and then they appear to believe that there is safety in numbers.

The Painted Bunting often comes about country homes in the east and sometimes he will venture into a town if there are bushes and trees convenient. The Lazulis love the plains and the foot-hills; they are seldom found very high in the mountains. Their song is almost indistinguishable from that of the Summer Warbler.

Photo by W. L. Finley and H. T. Bohlman

LAZULI BUNTING

Young being fed by their mother

PAINTED BUNTING

Passerina ciris (*Linnæus*)

A. O. U. Number 601

Other Names.— Painted Finch; Pope; Nonpareil; Mexican Canary.

General Description.— Length, 6 inches. Male, blue, green, and reddish above, and red below; female, green above and yellowish below. Bill, small; wings, long and pointed; tail, about ¾ length of wing, slightly double rounded.

Color.— ADULT MALE: Head and neck, except chin and throat, purplish-blue; black and shoulders, bright yellowish-green; rump and upper tail-coverts, purplish-red; eye-ring (more or less complete) and under parts, including throat, vermilion red; greater wing-coverts, parrot green; middle coverts, dull reddish-purple, lesser coverts, dull purplish-blue; wings, dusky edged with dull-purplish and green; tail-feathers, dull dusky-reddish or purplish; upper jaw, blackish; iris, brown. ADULT FEMALE: Above, plain dull green; beneath, olive-yellowish, clearer yellow on abdomen and

under tail-coverts. YOUNG: Above, dull grayish-brown tinged here and there with greenish; middle and greater wing-coverts, narrowly tipped with pale buff or buffy-grayish; under parts, dull grayish-buffy.

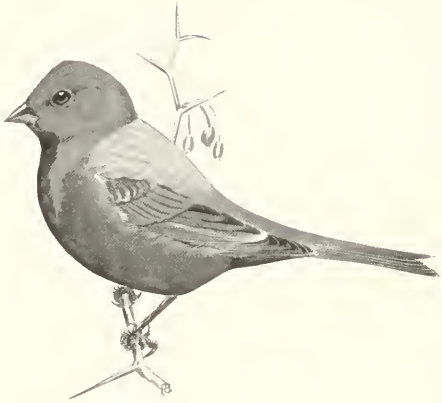
Nest and Eggs.— NEST: Located in cat-claw, blackberry, chaparral or other low bushes and saplings or in tall trees; a compact structure, composed of leaves, twigs, grass, bark strips, and lined with fine grasses and horse-hair. EGGS: 4 or 5, creamy or bluish-white, spotted and blotched with reddish-brown and lavender.

Distribution.— Southeastern North America; north to coast of North Carolina, southern Illinois, southern Kansas; south, in winter, to Bahamas, Cuba, the whole of Mexico, and through Central America to Panama; west during migration to Arizona; occasional in winter in southern Louisiana and central Florida.

The Painted Bunting is a southern bird of such a quiet manner that he is not very well known. He spends most of his time in the dense thickets of the river bottoms, or far off in bushy wood lots, or in the almost impenetrable tangles of the steeper hillsides. Far out in the southwest this Nonpareil (as he is better known in the West) is not quite so secretive. There he is found commonly in the mesquite and in the small brush of the river banks.

Like the Indigo Bird he sings best in the middle of the summer. But a great deal of the singing is done from the middle of a brush pile or the inside of a thicket of laurel or even in a mass of luxuriant semitropical weeds. Nonpareil seems also to favor the cypress swamps. This shy bird has a very sweet song resembling somewhat the song of the Indigo Bird. There is a conciseness and feebleness about the song that makes it, however, much inferior to the Indigo Bird. Sometimes there is a broken warble that rises to the level of sweetness, but Nonpareil does not lose himself long in his song. Maybe his painted and patched beauty attracts his attention to himself too much.

In Mexico he is quite a favorite cage bird. Americans along the border are therefore apt to speak of the bird as the Mexican Canary. Strange to say, his clear, carrying voice loses none of its quality in the cage, but his varied colors in time are much diminished.



Drawing by R. I. Brasher

PAINTED BUNTING (¼ nat. size)

A gaudy sprite who seems to know that it may be dangerous to be beautiful

Like most strikingly colored male birds, the Nonpareil struts before his modest colored mate in the mating season. With spread wings and tail he makes a very interesting picture parading up and down on the ground before his mate.

A closely allied species called the Varied Bunting (*Passerina versicolor versicolor*) and its variant, the Beautiful Bunting (*Passerina versicolor pulchra*), wander over the border from Mexico into Texas and Arizona. The Varied Bunting is of accidental occurrence in Michigan.

DICKCISSEL

Spiza americana (*Gmelin*)

A. O. U. Number 604

Other Names.— Black-throated Bunting; Little Meadowlark.

General Description.— Length, 6¾ inches. Upper parts, gray, brown, and black, streaked; under parts, white and yellow. Bill, stout, conical, and compressed; wings, long and pointed; tail, about ¾ length of wing, forked.

Color.—ADULT MALE: Crown, hindneck, sides of neck, and ear region, plain gray, the forehead and crown usually olive-greenish; over eyes a narrow stripe of pale yellow, sometimes white toward the back; back and shoulders, light brownish-gray or grayish-brown, streaked with black, the rump similar but paler and grayer and without streaks; middle wing-coverts, brownish-gray with dusky shaft-streaks; lesser and middle wing-coverts cinnamon-rufous; greater coverts and wing feathers, dusky centrally broadly edged with pale wood-brownish, the former sometimes tinged with cinnamon-rufous; secondaries, primaries, and tail feathers, grayish-dusky edged with pale buffy-grayish (edging nearly white on outermost primaries and tail feathers); cheek region, yellow toward the front, white toward the back; chin (and usually upper throat), white; breast (sometimes part of abdomen also) yellow, this fading into white on lower abdomen, under tail-coverts, etc.; the sides and flanks, pale brownish-gray; a black patch, of exceedingly variable shape and extent, on lower throat, sometimes continued backward along the middle line of breast to upper part of abdomen or forward (but not including) the chin; iris, brown. ADULT FEMALE: Much like the adult male, but coloration much duller; upper parts, more brown, with the crown and rump usually streaked with dusky; stripes over the eye and on the cheeks with less of yellow, sometimes with none; under parts with yellow of breast more restricted; whole throat white, margined on the sides by a streak of dusky; no black spot on lower throat, or else this much smaller than in male; flanks streaked with dusky.

Nest and Eggs.— NEST: Placed on ground sheltered by a tuft of grass, or in trees or bushes sometimes fifteen feet up, but the typical site is on the ground, in meadows or fields; constructed principally of dried grass, with some leaves, weed stems, rootlets and shreds of corn husks, lined with fine grass or horsehair. EGGS: 4 or 5, plain pale blue.

Distribution.— United States east of Rocky Mountains, and southward in winter through New Mexico, Arizona, Mexico (both coasts), and Central America to Colombia and Trinidad; occasional during migration in Jamaica and on Swan Island (Caribbean Sea); breeding from South Carolina (formerly), Alabama, Mississippi, and Texas north to North Dakota, Minnesota, Wisconsin, Michigan (south of lat. 43°), southern Ontario, etc., formerly to eastern Massachusetts. Now chiefly restricted during the breeding season to the region between the Allegheny Mountains and eastern base of the Rocky Mountains, having, for unknown reasons, become practically extinct since about 1870 throughout the whole of the Atlantic coast plain.

The Dickcissel is so named from the simple song with which he makes cheery the fence-rows and bushy corners of the prairies. It is a simple song, almost too furry and certainly too simple to be counted as good bird music. But the constant repetition comes to influence the listener with pleasure because there is a summery, homely sweetness about the persistency of the notes that matches the season.

The bird has been called the Black-throated Bunting and also the Little Meadowlark. His habits are those of the bush-haunting Sparrows, from whom he is never far away except when in the migratory winter flocks on the Texas plains. There the flocks are ever in motion moving on by flight of the rear ranks over to the front in a continuous forward procession. But up in the more northern areas he is a shy bird. Professor Walter B. Barrows says that it "is one of our most interesting birds, not alone on account of its beauty, but because it varies greatly in numbers in different localities, and in the same locality in different years." This great variation in frequency is most noticeable along the outer edges of its area. In 1871 the bird was common at Colorado city, but it has not been noted as common in the State of Colorado since that time. About Civil War times Dickcissels were not rare in western New York and western Pennsylvania, areas in which they are now counted as only accidental visitors. Along the north side of the Dickcissel area, the birds are common one year, rare the next, absent the next and then back again to common. Different districts over the north side of the Dickcissel range are going through different experiences at the same time. Southern Michigan may be losing Dickcissels over a period of five years while eastern Wisconsin is gaining, the upper Mississippi valley retaining its numbers and south-

western Minnesota losing. How all this is to be accounted for is yet to be worked out by those who are willing to give time to the study of the food and habits of the bird.

Drawing by R. I. Brasher

DICKCISSEL (⅔ nat. size)

Nowhere is the bird classed as one of the leading bird favorites, and yet a person who lives in the central States and the middle west, and does not know this bird is missing an unusually interesting neighbor. This is so because of his song, his unusual beauty, his plump and genial personality, and above all, the uncertainty of his presence. But, do not forget, that more than once experienced ornithologists have proved that it is quite possible and very easy to mistake a male English Sparrow for a Dickcissel.

The Dickcissel is preëminently an eater of grasshoppers. During the months of May, June, July, and August, these insects form over 40 per cent. of his food. Caterpillars — canker worms and other span-worms and cutworms — beetles and snails complete his animal diet. Of course, being a typical seed-eater its staple food during a large part of the year consists of the seeds of weeds and grasses.

LARK BUNTING

Calamospiza melanocorys *Stejneger*

A. O. U. Number 605

Other Names.— White-winged Blackbird; White-winged Prairiebird; Prairie Bobolink.

General Description.— Length, 7¾ inches. Male in summer, black; male in winter and female at all seasons, grayish-brown above and white below, streaked above and below with dusky. Bill, large and conical; wings, long with truncated tips; tail, about ¾ length of wing, even, the feathers rather narrow.

Color.—Adult Male in Summer: Uniform black, with a grayish cast on back, etc.; middle and greater wing-coverts, mostly white, forming a conspicuous patch; inner wing quills, edged with white, and tail-coverts (especially the lower) margined with white; outermost tail feathers, edged with white and sometimes with a large white spot at tip of inner web. Adult Female in Summer: Above, grayish-brown streaked with dusky; wings with a white patch, as in the male, but this smaller, more interrupted and tinged with buffy; under parts, white streaked on breast, sides, etc., with dusky. Adult Male in Winter: Similar to adult female, but feathers of under parts, especially on abdomen, black beneath the surface (this showing where feathers are disarranged); chin, black. Adult Female in Winter: Similar to the summer female, but less grayish-brown and with paler markings more strongly tinged with buff.

Nest and Eggs.— Nest: On ground, sunk to level and usually under shelter of a tussock of grass or weeds; constructed of grass and fine weed stems, lined with fine grasses and vegetable down. Eggs: 4 or 5, plain light-blue.

Distribution.— Great Plains between Missouri River and Rocky Mountains; breeding from middle and western Kansas, eastern Colorado, western Minnesota, etc., to Manitoba and Assiniboia; migrating south and southwest in winter, through Texas (to Gulf coast), New Mexico, and Arizona to plateau of Mexico, Lower California, and coast of southern California; occasional west of Rocky Mountains, and accidental in Massachusetts, New York, and South Carolina in the fall.

The Lark Bunting is a bird of the prairies and might very well have been named from the prairies. Western Kansas and eastern Colorado are the home of most of the Lark Buntings, though they are scattered over a much wider area. Sometimes out on the plains it is called the White-winged Blackbird. That name certainly defines the bird. American bird students, however, associate the name Blackbird with the Troupials instead of the Finches. Just one western schoolgirl has fallen upon the name of White-winged Prairiebird, which name seems to

avoid confusion with one of our most popular and widespread American birds, the Lark Sparrow. To show the lack of definiteness about the common name of this bird, it is probably better known as the Bobolink, among the farming families of the prairies, than by any other name. There are many Bobolink traits about the bird, superficial traits to be sure, but enough to make the easterner out on the plain recall his beloved Bobolink of the east.

The Lark Bunting has a rich song during the breeding season. After that the song ceases. The song is poured out frequently on the wing much in the manner of the Bobolink though the song itself has nothing of the Bobolink quality. When many Lark Buntings are singing at once, some from the tops of weeds and others on the wing, the effect is rich and musical.

In habits the birds are rather shy on the breeding grounds, particularly the females. They are found frequently feeding silently among the flowers of the prairie floor. At other times they are silently waiting on top of some bushes or rails. One man says the Lark Buntings are "always sitting around as if they had nothing to do." When the winds blow, this bird does not flee to cover as do many birds. He often stays out in the winds as though he enjoyed them; and he has been seen fighting the gales as though his life depended on going to some destination at that time.

When the migration time comes, the flocks of Lark Buntings are seen on the more southern prairie lands of Texas and the southwestern country. There they are not at all shy, but

Drawing by R. I. Brashe

LARK BUNTING (½ nat. size)

A western schoolgirl has well named him the "White-winged Prairie Bird"

rather friendly and curious of humans and domestic animals. As they fly over in these flocks they utter a cheery, sweet *hoo-ee* with a rising inflection that is distinctive of this bird and very attractive.

TANAGERS

Order *Passeres*; suborder *Oscines*; family *Tangaridæ*

IN the Tanagers, the bill is somewhat conical in shape, decidedly longer than its breadth or depth at the base; the distinct ridge at the top is curved and at the tip is hooked. The nostrils are exposed and rather large and either oval or roundish. There are bristles at the corners of the mouth but these are not conspicuous. The wing is moderate or long and pointed or rounded. The tail is shorter than the wing; it is sometimes notched, sometimes even, and sometimes slightly forked at the end; the feathers are of medium width and rounded at the tips.

In coloration the adult males are more or less red, sometimes entirely so, with or without black wings and tails, the wings sometimes being marked with white, yellow, or reddish bands. The adult females have the red replaced by olive-greenish above and by yellowish beneath, but the wing pattern is the same as in the male. The first plumage of the young differs from the adult coloring in being streaked beneath.

Tanagers are found in temperate North America southward through Mexico and Central America and tropical South America to Argentina, Bolivia, and Peru.

The word "Tanager" is derived from the Latin name *Tanagra* which Linnæus applied to the genus and which is probably of Brazilian origin.

WESTERN TANAGER

Piranga ludoviciana (*Wilson*)

A. O. U. Number 607

Other Name.— Louisiana Tanager.

General Description.— Length, 7½ inches. Male, yellow, black, and red; female, olive-greenish, yellow, and dusky. Bill, stout; wings, moderately long and pointed; tail, shorter than wing, notched.

Color.—ADULT MALE IN SUMMER: Back, shoulders, wings, and tail, black; back sometimes slightly mixed with yellow; posterior row of lesser wing-coverts, middle coverts, broad tips to outer webs of greater coverts, rump, upper tail-coverts, hindneck, and under parts of body, yellow, the tips to greater wing-coverts, usually paler yellow, sometimes whitish, and the hindneck, sometimes tinged with red; head, crimson, paler on throat; under wing-coverts, light yellow; bill, dull wax-yellowish; iris, brown. ADULT MALE IN WINTER: Similar to the summer male but with head yellow (or but slightly tinged with red), obscured on back of head and hindneck with olive-greenish or dusky tips to the feathers; feathers of back, usually margined with yellowish-olive; inner wing quills and the tail feathers margined terminally with white or pale yellow. ADULT FEMALE: Above, olive-greenish, the back and shoulders tinged with gray, the rump and upper tail-coverts more yellowish: wings, grayish dusky with light olive-greenish edgings; middle coverts broadly tipped with light yellow and outer webs of greater coverts, broadly tipped with paler yellow or white, forming two distinct bands; tail, grayish-brown with yellowish olive-green edgings; under parts dull yellowish, the under tail-coverts, clear canary-yellow; anterior portion of head, sometimes tinged with red; bill and iris as in adult male.

Nest and Eggs.— NEST: A flat saucer-shaped structure, generally low down on horizontal branch of a conifer or oak, sometimes 30 feet up; constructed of twigs, grass, and bark strips, lined with similar finer material and horse-hair. EGGS: 3 or 4, pale bluish-green, lightly spotted with browns and purple.

Distribution.— Western North American, from eastern base of Rocky Mountains to Pacific coast, northward to British Columbia, Athabasca, Idaho, Montana, and southwestern South Dakota; south in winter over greater part of Mexico to highlands of Guatemala; straggling eastward during migration to more northern Atlantic States.

The easterner, seeing for the first time the wonders of the Pacific slope, hears in the deciduous woods a voice from "back home." It is the song of a Tanager; but when followed to its source the singer is seen to be not the Black-winged Redbird of the east, but a western bird, the most brilliant of them all. It is handsome and striking in plumage and elegant in form. The scarlet, yellow, and black of the male are colors ordinarily associated with tropical birds and not with the songsters of the north, but its lay seems almost exactly that of the scarlet beauty of the eastern woods.

When the territory of Louisiana, then an unknown land, stretched from the Mississippi to the Pacific, this, the most beauteous small bird of that great region, was called the Louisiana Tanager; but the name is inappropriate now; for the bird is only a rare migrant in the Louisiana of to-day. The name Western Tanager is well chosen.

This bird is common on the mountain sides of the Sierra Nevada in California, where it sings from the tops of tall trees, also in the deciduous woods in some of the river valleys of Oregon, Washington, and British Columbia. It is a forest bird and often builds its nest in firs or pines. It is a retiring species, although it can hardly be called shy, and like the Scarlet Tanager it sometimes ventures out of its forest fastnesses into the nearby clearings. This Tanager feeds its young chiefly on insects which it is expert at catching both on trees and on the wing. EDWARD HOWE FORBUSH.

The Western Tanager, like the Robin, occasionally becomes a nuisance in the orchard. It breeds in the mountainous regions of California and northward, and as a rule is not common in the fruit-growing sections. There are, however, times during migration when it fairly swarms in some of the fruit-raising regions, and unfortunately this sometimes happens just at the time when the cherry crop is ripening. The bird is a late breeder and does not seem to care to get to its nesting ground before the last of June or early July. It is thus enabled to begin in the southern part of the State when cherries are ripening there, and leisurely follow the ripening fruit northward. The Tanagers are in California every year, and every year they migrate to their nesting grounds in spring and return in fall, but only at long intervals do they swarm in prodigious numbers. Evidently the migration

ordinarily takes place along the mountains where the birds are not noticed. It is possible that in some years the mountain region lacks the requisite food, and so the migrating birds are obliged to descend into the valleys. This would seem to be the most plausible explanation of the occurrence — that is, that the usual line of migration is along the Sierra Nevada, but some years, owing to scarcity of food, or other cause, the flight is forced farther west into the Coast ranges, where the birds find the ripening cherries. As, under ordinary circumstances, the greater part of the food of this bird consists of insects, many of them harmful, the Tanager has a fair claim to consideration at the hands of the farmer and even of the orchardist.

It is probable that means may be found to prevent, at least in part, the occasional ravages of the Tanager on the cherry crop. The Tanager, like the Robin, prefers to swallow fruit whole, and as the latter takes small wild cherries in preference to the larger, cultivated kinds when both are equally accessible, it is probable that the Tanager would do the same.

Drawing by R. I. Brasher

WESTERN TANAGER (⅔ nat. size)

A gay mountaineer often found above the clouds

SCARLET TANAGER

Piranga erythromelas *Vieillot*

A. O. U. Number 608. See Color Plate 87

Other Names.— Black-winged Redbird; Firebird; Canada Tanager; Pocket-bird; Scarlet Sparrow.

General Description.—Length, 7 inches. Male: in summer, red with black wings and tail; in winter, red replaced with yellowish-green and yellow. Female: body, yellowish-green above and yellow below; wings and tail, brownish-gray. Bill, stout; wings, moderately long and pointed; tail, shorter than wing, notched.

Color.— Adult Male in Spring and Summer: *Uniform intense (flame) scarlet, the shoulders, wings, and tail uniform deep black*; under wing-coverts white (sometimes tinged with scarlet), with a broad outer margin of black; bill grayish-blue basally, dull yellowish green terminally; iris, brown; legs and feet, pale lavender-gray or lilaceous grayish-blue. Adult Male in Fall and Winter: Wings and tail, black as in summer; rest of upper parts, yellowish olive-green, more yellowish on forehead and crown; under parts yellow, shaded with olive-green on sides. Adult Female in Spring and Summer: Above, yellowish olive-green; wings (except lesser coverts) and tail, dusky brownish gray with olive-greenish edgings; under parts light yellow, shaded laterally with olive-greenish; under tail-coverts, clear canary yellow; under wing-coverts, grayish-white with broad outer margin of grayish olive-green; bill, horn color; iris, brown; legs and feet, bluish-gray in life. Young Male in First Autumn: Similar to adult female but yellow of under parts rather clearer, and middle and greater wing-coverts margined terminally with light yellow; the black first appearing (by middle of September) on lesser and middle wing-coverts and shoulder.

Nest and Eggs.— NEST: On horizontal limb of low saplings, generally low but sometimes 40 feet up, in retired woodlands; a flat, loosely put together structure of stems, roots, and bark strips, lined with rootlets and fine inner bark; some composed almost entirely of brownish rootlets. EGGS: 3 to 5, generally 4, greenish-blue, speckled and blotched with chestnut; occasionally the eggs are very faintly and finely spotted, altogether lacking the usual bold markings.

Distribution.— Eastern United States and more southern British provinces, north to New Brunswick, Nova Scotia, northern Ontario, Manitoba; breeding southward at least to Virginia, Kentucky, Missouri, etc., (in Allegheny Mountains to South Carolina); in winter migrating southward to West Indies and through Mexico, Central America, and northern South America to Bolivia and central Peru; west, casually to eastern Colorado and Wyoming; accidental in Bermudas.

The sudden appearance in deep woods of this remarkable bird, its almost dazzlingly brilliant red and black plumage outlined sharply against the dark green of summer foliage, is nothing less than startling to an observer whose eye is sensitive to color contrasts. And if the observer, instead of being intent upon the length of a bird's bill in relation to that of its hind claw, and the precise number of primary, secondary, and tertiary wing-feathers it possesses, is interested in bird personalities, as expressed in various ways, he is likely to count as a veritable red-letter day the one which brought him a glimpse of this gaudy reminder of what Nature can do when she is in the mood to produce striking effects.

To speak candidly, this Tanager is usually a rather stupid and lifeless bird in its action. It moves about with an air of being dull-witted or dazed or, perhaps, bored. Also it has a characteristic trick of peering, with its head cocked first to one side and then to the other, as though it were in doubt about something. But perhaps it realizes that it doesn't have to perform or cut capers in order to attract attention, which indeed is the case. On the other hand, it is only fair to add that the bird not only does comparatively little posing in plain sight, but spends much of his time in the tree-tops where he gives the observer only exasperatingly brief glimpses of his radiant apparel. From such places he sounds most frequently his characteristic and emphatic call-note, which has been variously transliterated as *chip-churr, chic-burr,* and *chip-bang,* and also delivers his complete song. This is a carol not unlike that of the Robin, and is described by Mr. Burroughs as a "proud, gorgeous strain," while Mr. Dawson reduces it to the syllables, *terr-que-e-e-ry, ze-erve, pees-croo, be-zoor!* Mr. Mathews remarks the peculiarity that "every note is strongly double-toned or burred," as though the bird were a little hoarse, and supplies this illuminating analysis of the song: "There is a lazy, drowsy, dozy buzz to this beau-

Drawing by R. I. Brasher

SCARLET TANAGER (¼ nat. size)

This gaudy fellow might easily be mistaken for a wanderer from the tropics

CHANGING MALE — SCARLET TANAGER *Piranga erythromelas* Vieillot — MALE IN SUMMER — FEMALE — MALE IN WINTER

SUMMER TANAGER *Piranga rubra rubra* (Linnaeus — FEMALE — MALE — CHANGING MALE

All ⅔ nat. size

tiful bird's voice which one can only liken to a giant musical bumble bee, or an old-time hurdy-gurdy; the unobtrusive music speaks of summer's peace and rest, soft zephyrs blowing over sighing pine-trees, and tinkling shallows of woodland brooks."

There remains to be noted the extraordinary color difference between the magnificent male Tanager and the neutral, even dull, hues of the female's plumage. When the birds are seen together this contrast is so pronounced that uninformed persons are often incredulous about the relationship, and are disposed to insist that they must represent totally different species.

In the cool early spring as the farmer begins his plowing there may be seen among the Blackbirds following almost at his heels the Black-winged Redbird. He is just as industriously picking up grubs, ants, ground-beetles, and earthworms as his companions. However, as the season advances, he shows his preference for trees, and for the remainder of his stay with us he may be found in the woods and orchards. Here his chief occupation is hunting caterpillars and he has few superiors in this work. Leaf-rolling caterpillars he skillfully extracts from the rolled-up leaves; he is very destructive to the gypsy-moth, taking all stages except the eggs. The larvæ of gall-insects and other injurious larvæ have their places on his menu. When wood-boring and bark-boring beetles and weevils are in season, they form a considerable proportion of his food. He eats very greedily of click-beetles, leaf-eating beetles, and crane-flies whenever and wherever he finds them.

The vegetable food of the Tanager is seeds, berries, and small fruits. He seems to prefer the wild varieties.

SUMMER TANAGER

Piranga rubra rubra (*Linnæus*)

A. O. U. Number 610 See Color Plate 87

Other Names.—Redbird; Summer Redbird; Smooth-headed Redbird; Bee Bird.

General Description.—Length, 7½ inches. Male, red with grayish-brown wings; female, yellowish olive-green above and yellow below with grayish-brown wings. Bill, stout; wings, moderately long and pointed; tail, shorter than wing, notched.

Color.—Adult Male: *Above, plain dull red*, brighter on crown, rump, and upper tail-coverts; wings and primary coverts, grayish-brown edged with dull red; under parts, clear, rich vermilion; the under wing-coverts, paler; bill, light brownish; iris, brown. Adult Female: *Above, plain yellowish olive-green*, more yellowish on crown, lower rump, and upper tail-coverts, the back and shoulders sometimes tinged with grayish; primaries, grayish-brown with light yellowish olive-green edgings; lores, pale yellowish-gray; an indistinct eye-ring of light dull yellow; under parts, dull yellow, the under tail-coverts chrome-yellow; bill as in adult male. Young Male in First Autumn: Similar to the adult female, but more richly colored, the under tail-coverts deep chrome-yellow, the general color of upper parts more ochraceous, with crown, upper tail-coverts, tail, and edges of primaries tinged with dull orange.

The only seasonal difference of color in this species is the greater intensity of the colors in autumn and winter, the opposite extreme being represented in midsummer specimens. Immature males are variously intermediate in plumage between the plumage of the adult female and that of the adult male, the relative proportion of red and yellowish varying according to age, several years being required for attainment of the full plumage. Adult females not infrequently show touches of red, sometimes a considerable amount of this color, but such females may be distinguished from immature males by the duller color of the red.

Nest and Eggs.—Nest: Generally in deciduous trees on a horizontal limb from 5 to 60 feet up; so thinly constructed of bark strips, rootlets, a few leaves, and grass as to show the eggs from beneath; in central and southern States sometimes more compactly built by the addition of down and moss. Eggs: 3 or 4, light green inclining to emerald, spotted and blotched with sepia, lilac, and brownish purple.

Distribution.—Eastern United States in summer, breeding from the Gulf States (Florida to eastern Texas) north to southern New Jersey and southeastern Pennsylvania, southern Ohio, central Indiana, central Illinois, southern Iowa, etc.; casual or occasional visitant north to Nova Scotia, New Brunswick, Maine, Connecticut, Ontario, etc.; in winter south to Bahamas, Cuba, eastern Mexico, Central America and north and northwestern South America.

From New Jersey southward to central Florida the Summer Tanager makes its summer home. It inhabits open woodlands and is partial in some sections to those forests of yellow pine where an undergrowth of small oaks makes conditions attractive for such birds. It is not much given to inhabiting the dense hammocks or the swamps of heavy cypress. It is not a particularly shy

bird, and in North Carolina and Virginia it may be seen in many of the towns where shade trees and orchards are plentiful.

To distinguish it from the Cardinal, which is seen in winter quite as often as in summer, and is often called "Winter Redbird," this species is known to many southerners as "Summer Redbird." The nest is built well out on the horizontal limb of some deciduous tree, usually at a height of about fifteen feet. Often the spot chosen is directly over a path or some woodland road.

The bird has a pleasing song. Its usual call-note is loud and clear and somewhat resembles the words *which-a-too*. T. Gilbert Pearson.

Because of his habit of eating honeybees, the Summer Tanager has been given the name of Bee Bird. Otherwise his food of insects and fruits is of such a character as to be helpful to those who depend in any way upon forest products. In the early summer many large beetles and wasps besides the bees are eaten by him and his family. Later he feeds chiefly on blueberries and other small fruits.

In the southwestern part of the United States we find Cooper's Tanager or Western Summer Tanager (*Piranga rubra cooperi*). It is larger and paler than its eastern congener. It is especially fond of the cotton woods.

SWALLOWS

Order *Passeres*; suborder *Oscines*; family *Hirundinidæ*

SWALLOWS constitute perhaps the best defined group among the singing birds, and are characterized by their very short, flat, triangular bills, large mouths, extremely long wings reaching when closed to or beyond the end of the tail, and short legs and weak feet (fitted only for perching). Their tails are never rounded nor graduated but are always notched or forked; there are always twelve feathers in the tail, the outside two sometimes being very much longer than the others.

The plumage of the Swallows is compact, usually lustrous or semi-metallic, at least on the upper parts; sometimes it is dull-colored throughout. They molt but once a year, usually in the fall or winter.

The family is cosmopolitan and there are over one hundred recognized species throughout the world. The warmer countries have the largest number; America is credited with thirty-one species, all but one of which are peculiar to the western hemisphere.

Most migrating birds "fly by night, and feed by day," but the Swallows, as far as known, travel only in the day-time. At night they stop at roosting places used with such regularity as to be known as migration stations. Sometimes these places of rest are in trees but generally they are in marshes. They travel very slowly and whenever they come to a large body of water rather than fly across it they will go around it.

The Swallows are decidedly birds of the air, capturing insects and eating them while on the wing. Most of their time is thus passed in flying, and this probably accounts for the extraordinary development of their wings.

PURPLE MARTIN

Progne subis subis (*Linnæus*)

A. O. U. Number 611 See Color Plate 88

Other Names.— Martin; Black Martin; House Martin.

General Description.— Length, 8 inches. Plumage, steel-blue. Bill, stout; tail, about ½ length of wing, forked for about ⅓ of its length.

Color.— Adult Male: *Uniform glossy steel-blue;* lesser and middle wing-coverts glossy dark; rest of wings, and tail, dull black, or sooty-black; iris, brown. Adult Female: Above, much duller and less uniform steel-blue than in adult male; forehead, sooty-gray;

sides of neck, light-grayish, the hindneck usually crossed by a dull sooty-grayish band or collar, this usually indistinct; *chin, throat, chest, sides, and flanks, sooty-gray;* breast, abdomen, and under tail-coverts, white or pale grayish, usually streaked, narrowly, with dark sooty-gray.

Nest and Eggs.— NEST: In boxes erected for their use, a few pair occasionally returning to primitive conditions and nesting in hollow trees; nesting material consisting of nearly anything handy — leaves, rags, paper, string, straw, or grass. EGGS 4 to 6, pure glossy-white, unmarked.

Distribution.— Temperate North America, except Pacific coast district; breeding north to Maine, New Brunswick, Nova Scotia, northwestern Ontario, Manitoba, Montana, and Idaho; breeding southward to southern Florida, southern Texas, and plateau of Mexico; in winter, from southern Florida and Mexico to Venezuela and Brazil; accidental in Bermudas and British Isles.

Swallows are everywhere in good repute. Of all the species the Purple Martin is undoubtedly the most popular. Houses are erected for their accommodation in all parts of the country. In some sections of the south there scarcely can be seen a negro's cabin but what has its Martin box, or more often a number of gourds swung from crossed strips erected on the top of a pole. Like other Swallows, these birds nest in colonies when accommodations are adequate; thus a dozen pairs will sometimes occupy as many compartments of a bird-box.

These friends of the Martins in the south do not all provide homes for the birds from an altruistic standpoint, or for sentimental reasons. Martins defend their nests with great tenacity, and drive from the neighborhood any Crow or Hawk that comes within sight; they are, therefore, cherished as important guardians of the poultry yard.

Their nests are made of a miscellaneous collection of sticks, wood-stems, feathers, grasses, and mud. Before the settlement of the United States by Europeans, the Indians of the South encouraged the birds to come about their fields by putting up gourds for their accommodation. This, to be sure, was not practiced extensively enough to provide homes for all the Martins of the country; furthermore we can readily imagine a time of sufficient remoteness when no nesting devices whatever were erected for their use. The original nesting places of the Martin, therefore, were such as nature provided, and these we know were the hollows of trees. So dependent have the birds become on man's bounty, that hollow trees are rarely used by them. In the pine woods on the edge of the Everglades of south Florida, I have found Martins breeding in hollow trees, and not long ago I saw birds similarly engaged in a little grove on the border of Devil's Lake, North Dakota. In some cities they build in the holes of buildings, as for example in Seattle; in other places under the eaves of buildings, as in Bismarck, North Dakota, and in Plant City and Clearwater, Florida.

T. GILBERT PEARSON.

In the Pacific Coast region south into Lower California is found the Western Martin (*Progne subis hesperia*). The male is not distinguishable from the male of the Purple Martin; but the female has the gray of the forehead extending back into the crown, a conspicuous edge of grayish-brown to the feathers of the back and rump, and the under parts grayish-white anteriorly and immaculate white posteriorly.

Drawing by R. I. Brasher

PURPLE MARTIN (¼ nat. size)

A beautiful and useful bird

The Martins are among the most beneficial of birds. Their food consists almost entirely of insects — wasps, bugs, beetles, and flies. Among the beetles are the boll-weevils, clover-leaf weevils, and nut weevils. Locusts are eaten at all stages.

CLIFF SWALLOW

Petrochelidon lunifrons lunifrons (*Say*)

A. O. U. Number 612. See Color Plate 88

Other Names.— Eave Swallow; Jug Swallow; Barn Swallow; Mud Swallow; Republican Swallow; Crescent Swallow; Rocky Mountain Swallow; Moon-fronted Swallow.

General Description.— Length, 6 inches. Upper parts, steel-blue; under parts, chestnut and whitish. Bill, very short; tail, less than ½ length of wing, slightly notched.

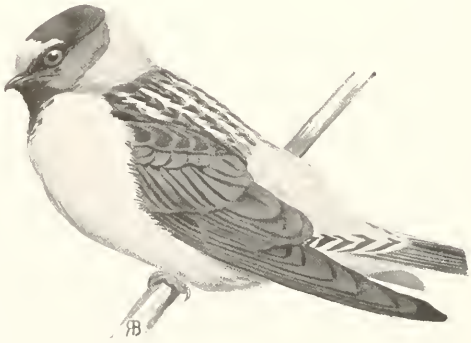
Color.—ADULTS: *Forehead, dull white*, dull pale ecru-drab or pale wood brown, forming a conspicuous patch, very sharply defined at rear, its extremities pointed; crown and back of head, glossy blue black; hindneck, hair-brown or brownish-gray; back and shoulders, glossy blue-black, the former streaked with pale gray or whitish; *rump, light cinnamon-rufous;* upper tail-coverts, brownish-gray or hair-brown with paler margins; wings and tail, dusky grayish-brown, the secondaries with paler margins; ear, eye, and cheek regions, chin and throat, rich chestnut; a patch of somewhat glossy-black on lower throat; chest, sides, and flanks, pale grayish-brown, the first usually tinged with pale chestnut; rest of under parts, whitish; iris, brown. YOUNG: Much duller in color than adults; crown, back, and shoulders, dull blackish or sooty; forehead, sometimes dull chestnut or brownish, more often dusky, like crown; sides of head and throat, mixed grayish-brown, dusky, and dull chestnut.

Nest and Eggs.— NEST: A cleverly constructed retort-shaped structure, fastened to cliffs or under eaves of outbuildings at its large end and extending horizontally; made of mud pellets mixed with straw and lined with feathers. EGGS: 3 to 5, speckled and spotted with reddish-brown and lilac.

Distribution.— Nearly the whole of North America; breeding north to Nova Scotia, New Brunswick, Anticosti Island, Province of Quebec, in the interior to Territory of Mackenzie and the Yukon Valley of Alaska, and on the Pacific coast to British Columbia; breeding southward over nearly the whole of the United States (except Rio Grande valley, at least above mouth of the Pecos River) and coast district of northwestern Mexico, as far as Mazatlan and Tepic. In winter, southward through Mexico and Central America, at least to Honduras. Said to occur in winter in Brazil, Paraguay, Argentina, and other parts of South America.

The Cliff Swallow is a bird of large colonies. Though distributed almost all over North America it is entirely absent in the breeding season from large areas. It was formerly supposed that it bred only in the West and that the advent of the Caucasian and his barns tempted the Cliff Swallows eastward to become Eave Swallows. It is likely that many places in the western half of the continent have always been the home of the largest colonies of Cliff Swallows; but the east and southeast have had their scattered colonies of Cliff Swallows both before and after the European settlements were made along the Atlantic shore.

The early explorers of the far West were much impressed by the enormous collections of Cliff Swallow mud bottle nests that were plastered over the great perpendicular rocks in many



CLIFF SWALLOW (5 nat. size)

Drawing by R. I. Brasher

places. One very conspicuous place where there was an immense colony was on the face of the high bluffs near the confluence of the Niobrara and Missouri rivers. As the settlements became established in the northwest the Cliff Swallows deserted the rocks in great numbers and became residents under the eaves of the farmers' barns.

They are unusually interesting birds in these large colonies. The air is full of Swallows where there are a few dozen mud bottles along under the eaves of a great barn. Going ever to and fro, in and out of the bottle nests, uttering their single notes continuously, it seems indeed a very busy place. But the individual birds are not in as much of a hurry as the collection seems to be. Many little chestnut-throated birds will be peering out of their nests, others leisurely flying backward and forward in front of the nests as though they were on inspection. Many more are coming in from far distant insect-infected areas with food for the young. Others, having chattered about for a little after feeding the young, are off with the directness of arrows and are soon out of sight. In any area within a few miles and where insects breed to fill the air, these Eave Swallows are up and down, and over and under, now down near the marsh or water, now flying high and round and round in circles; and then suddenly off with arrow-like directness in the direction of the home barn.

When the young are ready to come out of the nest the chattering increases enormously. The young hang on to the outside of the nests apparently fearful to try their wings. But once launched they soon become acquainted with all the methods of wheeling and turning, up-shots and down-dippings, to catch the wary insect on the wing. Then the whole colony deserts the eaves in a few days. Occasionally a pair is delayed behind the others by later hatchings, but it is not many days before they are all gone from the neighborhood.

The flocks of Bank, Barn, and Tree Swallows absorb these Eave Swallows, and together they work to clean the air of the inland lakes of all the flies and mosquitoes. They are up and down over the rivers and swamps and wheeling about over grain fields and pastures Sometimes they are in hundreds, sometimes in thousands, but always a good proportion of these summer and fall flocks are Cliff Swallows. Then if one goes into the salt marshes of the south, he will find tens of thousands that are on their way for tropical insects for the winter.

The Lesser Cliff Swallow (*Petrochelidon lunifrons tachina*) and the Mexican, or Swainson's, Cliff Swallow (*Petrochelidon lunifrons melanogastra*) are inhabitants of Mexico and countries to the south. The former comes over the boundary into Texas to breed, and the latter visits Arizona for the same purpose. Both are smaller than their more widely distributed relative. The frontal patch of the Lesser Cliff Swallow is fawn color, dull cinnamon, or wood brown; that of the Mexican Cliff Swallow is chestnut or cinnamon-rufous.

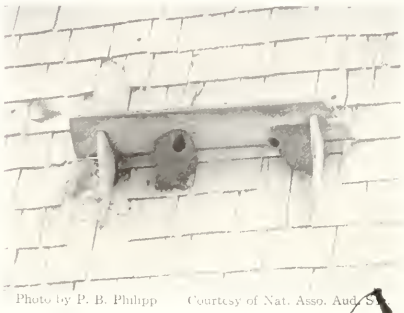


Photo by P. B. Philipp Courtesy of Nat. Asso. Aud. S.

NESTS OF CLIFF SWALLOWS

Cleverly constructed retort- or bottle-shaped residences

An analysis of the stomach contents of 123 Cliff Swallows showed about one-third of 1 per cent. vegetable matter; this included a few seeds but it was mostly rubbish taken accidentally. In the animal matter, ants, bees, and wasps, amounted to about 39 per cent. No worker bees were found; and as bee-keepers do not regard the destruction of drones as injurious to the swarms this cannot be counted against the Swallows. Bugs — assassin-bugs, leaf-bugs, squash-bugs, stink-bugs, shield-bugs, tree-hoppers, leaf-hoppers, and jumping plant-lice — formed about 27 per cent. Beetles of all kinds aggregated a little less than 19 per cent.; of these, 17 per cent. were harmful, some very much so. Gnats, dragon-flies, lace-winged flies, and spiders completed the menu.

The young are fed exactly the same kind of food that their elders eat, but the proportions vary. The soft-bodied insects are more often chosen by the parents for the nestlings as they are more easily digested. Adult Cliff Swallows do not take gravel themselves, but they feed it to the young.

L. Nelson Nichols.

BARN SWALLOW

Hirundo erythrogastra *Boddaert*

A. O. U. Number 613 See Color Plate 88

Other Names.—American Barn Swallow; Barn-loft Swallow; Fork-tailed Swallow.

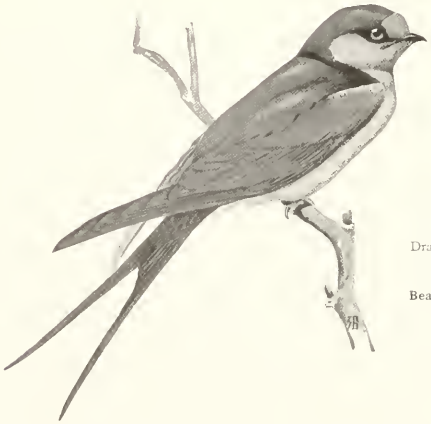
General Description.— Length, 7 inches. Upper parts, steel-blue; under parts, chestnut and red. Bill, small and depressed; tail, ⅔ length of wing, or longer, and forked for more than ⅓ of its length, the side feathers becoming gradually narrower and more drawn out to the outermost, which are sometimes almost thread-like for the end portion, but always with blunt tips.

Color.—Adult Male: Forehead, chestnut; rest of upper parts, glossy dark steel-blue; wings and tail, dusky faintly glossed with greenish, the middle wing-coverts and inner wing quills broadly margined with glossy steel-blue, the greater coverts glossed with the same; the inner web of the *tail-feathers (except the middle pair), with a conspicuous white spot;* cheek region, chin, throat, and chest, chestnut or deep cinnamon-rufous, the chest margined laterally by an extension of the glossy steel-blue from sides of the neck, these two lateral patches sometimes connected, narrowly, and thus forming a nearly complete collar; rest of under parts, pale cinnamon-rufous; iris, brown. Adult Female: Similar to the adult male and often not distinguishable. Young: Much duller in color than adults; crown and hindneck, sooty-black, much more faintly glossed with blue than back; forehead, dull light-brownish or brownish-buff.

Nest and Eggs.— Nest: A bowl-shaped hemisphere, attached to barn or other buildings, timbers, or on sides of caves; constructed of mud pellets mixed with straw and grass, thickly lined with feathers. Eggs: 3 to 6, white marked with spots of bright Indian red, brown, and lavender.

Distribution.— North America in general, north to Alaska, northern Mackenzie, southern Manitoba, and southern Ungava; breeding southward over whole of United States (except Florida); in winter from southern Florida and southern Mexico, through Central America and South America as far as southern Brazil, Paraguay, Argentina, Bolivia, and Peru, and throughout West Indies; occasional in Bermudas.

Like the Bluebird and the Robin, the Barn Swallow is a bird whose appearance in and departure from the northern reaches of its range have definite seasonal significance, even to those who have no particular interest in ornithology. The poets have had much to say about the bird's comings and goings. "When the Swallows Homeward Fly," the English words of which are translated from the German of Franz Abt's song, "*Wenn die Schwalben heimwärts zieh'n,*" has been known in this country for half a century, and has been sung by many thousands of school children, not to mention yet other thousands of grown-ups. The reference of course



Drawing by R. I. Brasher

BARN SWALLOW (½ nat. size)

Beautiful in flight, appearance, and disposition, and as useful as beautiful

is to the European Swallow, but that bird is very similar in its habits to the American Barn Swallow and has about the same hold on the affections of the people — especially the country people. Like many another poet's, however, good old Franz's ornithology was a bit unscientific, as is shown by the idea he expressed that the Swallows go "home" when they go to southland at the approach of winter. As a matter of fact, this misapprehension is not confined to the poets. Yet, a little reflection should make it clear that the "home" of a bird is obviously its nest, and that the home locality is the locality in which it builds its nest and rears its young. Whatever may be the reason for the southern migration in the autumn (and there are various explanations of that movement), the bird which breeds in the north is no more going "home" when it goes south than a man who lives in New York goes home when he goes to Palm Beach, Florida, for the winter.

The Barn Swallow's habit of building within barns, or on sheltered projections from any structure, has made it perhaps the most domesticated of any of the wild birds. Indeed, under these conditions this Swallow soon comes to occupy a position which seems only a short remove from that of the barnyard fowls; and its twittering as it skims to and fro from its nest, becomes as familiar as is the clucking of the hens, or the challenge of their lord and master, the rooster — and is certainly a great deal more melodious than either. Furthermore, the bird's habit of using barns as building sites has much inherent interest and significance, in that it represents a deliberate departure from its natural instinct to build in caves and under ledges, where it had made its home until man arrived upon the scene and furnished better protection from the elements and from the bird's natural enemies. A similar example of adaptiveness is furnished by the Cliff Swallow and the Chimney Swift, and doubtless all these birds were prompted to adopt the new nesting sites partly by the supply of insects, which of course is greater about barnyards than in the birds' natural habitats.

In a leaflet on the Barn Swallow, prepared for the National Association of Audubon Societies, Mrs. Mabel Osgood Wright discusses the lamentable diminution of the bird's numbers as follows: "We associate the Swallow with comfortable old-fashioned barns, which had open rafters, doors that could not be shut tight, and windows with many panes lacking. Within such buildings, almost as easy to get into and out of as were the caves and broken crags to which they resorted before barns were built, the Barn Swallows used to nest, sometimes in large colonies, while their cousins, the Cliff Swallows, had quarters beneath the outside eaves in a line of gourd-shaped tenements.

"Nowadays, however, in the more thickly settled and prosperous parts of the country, these loosely built old barns have given place to tightly constructed, neatly painted ones; thus, as the new replaces the old in their haunts, many a pair of Swallows drop from their sky-high wooing to find closed doors and tight roofs staring them in the face. So they move on. Whither? Out to the frontiers or into the 'back counties.' This

Photo by A. A. Allen

BARN SWALLOW

Poised at its nest under the gable of a barn. Photographed by light reflected from a mirror

accounts, in part, for what seems to be rather than is a decrease; but there is a constant and real loss of Barn Swallows, according to reports from all parts of the country, chargeable to the English Sparrows. These little bandits seem to have a special fondness for despoiling the nests of Swallows of all kinds, tearing them to pieces — perhaps for the sake of the feathers and other good materials for Sparrow-use — and disturbing their owners until the harassed Swallows finally abandon the premises. This is an extensive evil; and it can be prevented only by our taking the trouble to protect our Swallows against their feathered enemies. Cats also catch many Swallows, snatching them out of the air as they skim close to the ground in pursuit of grass-moths and similar low-flying insects. Rats and mice devour their eggs and young to some extent.

"A third and sadder reason why fewer Barn Swallows are now to be seen in a day's drive through the country than used to delight the eyes of bird-lovers, is that for several years they

were killed by thousands to make ornaments for women's hats. This is the bird, in fact, which aroused in the mind of George Bird Grinnell, then editor of *Forest and Stream*, such indignation at the waste of bird-life for millinery that he wrote that vigorous editorial in 1886 which immediately led to the founding of the first Audubon Society." GEORGE GLADDEN.

TREE SWALLOW

Iridoprocne bicolor (*Vieillot*)

A. O. U. Number 614 See Color Plate 88

Other Names.— White-breasted Swallow; Blue-backed Swallow; White-bellied Swallow; Stump Swallow; Eave Swallow.

General Description.— Length, 6 inches. Upper parts, greenish steel-blue; under parts, white. Bill, small; tail, not more than ½ length of wing, forked, but depth of notch usually less than ⅕ of its length, the side feathers broad to near tips where they suddenly contract, the tip rounded.

Drawing by R. I. Brasher

TREE SWALLOW (½ nat. size)

A bird which is following the Barn Swallow in accepting man's hospitality

Color.—ADULT MALE: *Above*, including sides of head and neck, and lesser wing-coverts, *uniform glossy greenish steel-blue*, varying to bluish-green; middle wing-coverts dull black, broadly margined with glossy steel-blue or greenish; rest of wings, and tail, dusky, or sooty-blackish, faintly glossed with greenish; lores, velvety-black; cheek region and *entire under parts, pure white;* iris, brown. ADULT FEMALE: Similar to the male, and sometimes not distinguishable, but usually duller in color, the upper parts less brightly steel-blue or green, often dusky grayish-brown with only the tips of the feathers glossy-blue or green; the rump and upper tail-coverts, sometimes uniform grayish-brown; chest, often faintly shaded with brownish-gray. YOUNG: Above, including sides of head and neck, uniform soft dark mouse-gray, the wing feathers margined at the ends with brownish-white; beneath, white, usually shaded across chest with pale grayish-brown.

Nest and Eggs.— NEST: In dead tree trunks, Woodpecker holes, in the vicinity of water, or in boxes erected for its use, made of grasses and feathers. EGGS: 4 to 7, pure white.

Distribution.— North America in general; north to Alaska, Mackenzie, and Ungava; breeding southward to Virginia, Mississippi, Kansas, Colorado, Utah, Nevada, and California; wintering from South Carolina (occasionally northward to New Jersey) and the Gulf States southward to the Bahamas, Cuba (occasional only?) and over greater part of Mexico to highlands of Guatemala; occasional in Bermudas; accidental in British Isles.

The Tree, or White-bellied, Swallow is the first of the Swallows to arrive from the south in the spring and the last of the Swallows to leave in the fall. Hardly has the frost gone out of the ground before the first flight (chiefly adult males) have come on in large numbers. A month or six weeks later the females arrive. Then they choose holes in trees for their nesting sites and make themselves very noticeable with their pure white under parts. They may be commonly seen all spring anywhere within a mile of their nests. In the Far West they are very common in the willow tracts about the ponds and marshes of southern California.

The Tree Swallows do not readily mass together in breeding colonies. In fact they are very jealous of their territory, engaging in fights in the spring to determine which shall leave the

BARN SWALLOW *Hirundo erythrogastra* Boddaert
FEMALE MALE

CLIFF SWALLOW *Petrochelidon lunifrons lunifrons* (Say)
ADULT IMMATURE

ROUGH-WINGED SWALLOW
Stelgidopteryx serripennis (Audubon)

BANK SWALLOW
Riparia riparia (Linnaeus)

PURPLE MARTIN *Progne subis subis* (Linnaeus)
MALE
FEMALE

TREE SWALLOW
Iridoprocne bicolor (Vieillot)
ADULT IMMATURE

All ½ nat size

neighborhood. Dead tree stubs and rotting upturned tree roots in flooded areas are the usual homes of the Tree Swallows. In some localities Swallow boxes have been erected and are readily occupied. English Sparrows are very apt to try to drive the Swallows out of the boxes. Sometimes they do, but the human proprietor can easily discourage the English Sparrows. The Swallows very readily learn that man is fighting the Sparrows and have been been known to call persistently when annoyed by English Sparrows so that the man may hear them and come to the rescue.

In the summer the Tree Swallows begin collecting into enormous flocks feeding in most all northern marshes. In the salt marshes east and west of New York city they are the most common Swallow in August. In September the large Tree Swallow flocks mix with on-coming flocks of Bank, Barn, and Cliff Swallows, but these other species pass on to the South from the northern States early in October, leaving the Tree Swallow to the last. They in turn go south a few hundred at a time leaving a few scattered birds even to the first of November. Sometimes Tree Swallows will be seen north of the Carolinas all winter, but the great bulk of them are spending the winter in Mexico.

According to Bicknell "the song is hardly more than a chatter. Its ordinary notes are less sharp and rapid than those of the Barn Swallow."

The food of the Tree Swallow, like that of other Swallows, consists almost entirely of winged insects. It would seem that when the first flight arrives in the spring that there would not be any of their particular kind of food for them. To the few stone-flies which they find and take on the wing, they add insects which they pick from the surface of the snow, and from twigs, fences, and sides of buildings. During migrations and in the winter they have a habit of roosting in bayberry and wax myrtle shrubs and at those periods they eat a great many of the berries.

Photo by T. G. Pearson Courtesy of Nat. Asso. Aud. Soc.

NESTING PLACE OF TREE SWALLOW

Heron Island, Maine

NORTHERN VIOLET-GREEN SWALLOW

Tachycineta thalassina lepida *Mearns*

A. O. U. Number 615

Other Name.— Violet-green Swallow.

General Description.— Length, 5½ inches. Upper parts, violet-green; under parts, white. Bill, small, weak, and much depressed; tail, less than ½ length of wing, forked for about 1/5 of its length, the side feathers broad to near ends, where the inner web is abruptly contracted, the tip blunt.

Color.—Adult Male: Crown and hindneck, varying from bronzy-green to purplish-bronze, the lower margin of the hindneck more purplish, often forming a distinct narrow collar; back, shoulders, and lesser wing-coverts, soft bronzy-green, usually tinged with purple or purplish-bronze; center portion of rump, and upper tail-coverts, varying from bluish-green (rarely) to rich violet-purple mixed with blue; wings (except lesser coverts) and tail, blackish, faintly glossed with blue;

ear region, entire under parts, and conspicuous patch on each side of rump pure white; under wing-coverts pale gray, becoming white on edge of wing; iris, brown. ADULT FEMALE: Much duller in color than the male; crown and hindneck, varying from grayish-brown, very faintly glossed with bronze or bronzy-green, to decided greenish or purplish-bronze; ear region otherwise, similar to the adult male.

Nest and Eggs.— NEST: In knot holes, deserted Woodpecker holes, hollow trees, or beneath house eaves; constructed of dried grass, lined with feathers. EGGS: 4 or 5, pure white.

Distribution.— Western North America; north to Alaska, east to Montana, Wyoming, Colorado, New Mexico, and western Texas — occasionally to South Dakota; breeding southward to southern California, Arizona, and New Mexico; in winter south to highlands of Guatemala and Costa Rica.

In Oregon, by the first week in March the first Violet-green, or White-breasted, Swallows have returned to their summer homes. For several years, I have watched the Violet-green Swallows return to my bird houses. There is no doubt in my mind that the same birds return to the same places year after year. I have known this on account of peculiarities of birds, their methods of building and the places they have built.

What a sense of location the Swallow has; for his journey from the south leads him through trackless paths of the unmeasured regions of the skies, yet he has some compass and sign posts that seem to guide him. I have often wondered how, from his lofty course, he knows just when he gets back to his old home. I have often wondered where he spends the night. If it rains, he will disappear for a week as suddenly as he came. But the minute another bright day dawns, I know he will be down around my orchard and he will remain till the summer is past. No wonder people used to think the Swallows dived into the mud to spend the winter; they appear so suddenly and are away again so mysteriously.

One thing that is necessary to a Violet-green's nest is a bed of feathers. These are always handier to get about the farm yard. I generally keep a good supply of these on hand when the Swallows are nesting. When I stand on the hillside and blow up the feathers, they ask for nothing better. The Swallows skim past and catch them before they touch the ground. When the feathers begin to appear, it isn't many moments till half a dozen Swallows are in the game. They flit back and forth and soon become tame enough to take the feathers the instant they leave my hand. Then occasionally, I have had a bird that was bold enough to snap a feather from my fingers.

In the western part of Oregon, the Violet-green Swallow formerly nested in old Woodpecker holes and crevices in stumps, or a knothole in the corner of a building. It is now one

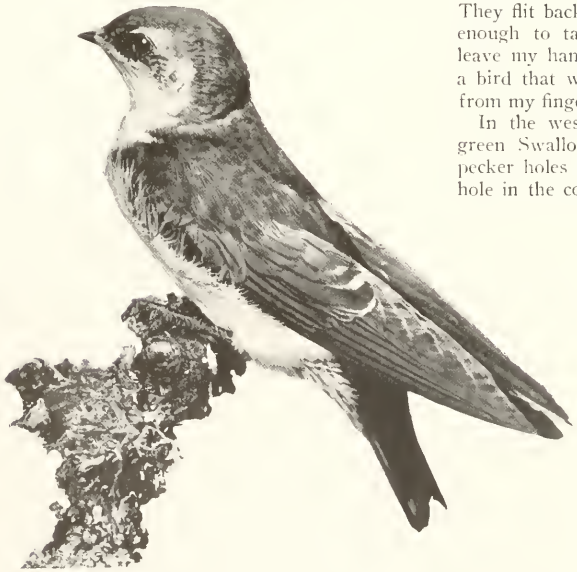


Photo by W. L. Finley and H. T. Bohlman

NORTHERN VIOLET-GREEN SWALLOW
(nat. size)

of the birds that invariably rent a bird house if it is put up about the garden or orchard. Or better still, if a hole is cut in the side of a woodshed and a box put on the inside, it is almost sure to be taken by a Violet-green Swallow.

WILLIAM L. FINLEY.

The food habits of the Violet-green Swallow have no marked peculiarities and are practically identical with those of its eastern relative, the Barn Swallow. Almost all of its food is insects and of these only 3 per cent. can be reckoned as useful.

BANK SWALLOW

Riparia riparia (*Linnæus*)

A. O. U. Number 616. See Color Plate 88

Other Names.— Sand Swallow; Sand Martin; Bank Martin.

General Description.— Length, $5\frac{1}{2}$ inches. Upper parts, grayish-brown; under parts, white and grayish-brown. Bill, small, moderately depressed; tail, about $\frac{1}{3}$ length of wing, forked for about $\frac{1}{6}$ of its length, the side feathers moderately contracted near the tips which are blunt.

Color.— ADULTS: Above, plain grayish-brown; chin, throat, cheek region, and under parts of body, with under tail-coverts, white, interrupted by *a broad band of grayish-brown across chest*, continued along sides (where fading out on flanks), the center portion of breast usually with concealed spots of grayish-brown; iris, brown. YOUNG: Similar to adults, but feathers of rump, upper tail-coverts, and inner wing quills broadly margined terminally with pale cinnamon-buff, pale wood-brown, or whitish, the wing-coverts more narrowly margined with the same; feathers of grayish-brown chest-band usually tipped or margined terminally with paler; chin and upper throat often speckled with grayish-brown, and white of under parts sometimes tinged with pale rusty or cinnamon.

Nest and Eggs.— NEST: An excavation, made by the birds, in a sand bank, from a foot and a half to three feet in length, the extremity hollowed out to hold the nesting material of straw, grass, and feathers. EGGS: Normally 5, pure white.

Distribution.— Northern hemisphere; in America breeding from arctic districts southward to Georgia (St. Simon's Island), Louisiana, Texas, Arizona, and northern Mexico; in winter migrating southward

Drawing by R. I. Brasher

BANK SWALLOW (½ nat. size)

through Mexico, Central America, and South America, as far as eastern Peru and Brazil, and to the West Indies.

There are but few species of American birds that nest in holes in the ground which they themselves excavate. One is the Kingfishers, whose chief representative is the well-known bird of the eastern United States, and another is the little Bank Swallow. It seems logical that birds which have so queer a common habit, should be in sympathy in other respects, and so it happens quite naturally that the big and brave and self-reliant fisherman in feathers and the timid little insect-hunting Swallow often dig their burrows in the same bank and seem to be on very good terms.

"Honey-combed" is about the only adjective which describes the appearance of a bank in which a colony of these Swallows have made their homes. Thoreau recorded seeing fifty-nine Bank Swallows' holes within a space of twenty by one and a half feet (in the middle), and doubtless this could be exceeded. The bank may be of either clay or sand (in fact there are two or three records of the birds actually having

made use of banks of sawdust!), and the bird uses both its bill and its claws in the tunneling operation. As such embankments commonly are the result of the action of water, these Swallows are likely to be seen in the neighborhood of rivers or ponds, though they may utilize the perpendicular surfaces of a brick-yard or of any other excavation left open to the sky, even comparatively narrow railroad cuts. However, they seldom show so decided a liking for human society as is manifested by the Barn and Eave Swallows and their relative, the Chimney Swift. The once quite prevalent theory that the Bank Swallows hibernate in their burrows during the winter months is, of course, preposterous.

The food of the Bank Swallow does not differ appreciably from that of the Tree Swallow with which it often associates.

Photo by H. K. Job Courtesy of Outing Pub. Co.

BANK SWALLOW AT NEST

A hole in a gravel bank

ROUGH-WINGED SWALLOW

Stelgidopteryx serripennis (*Audubon*)

A. O. U. Number 617 See Color Plate 88

Other Names.— Bridge Swallow; Rough-wing.

General Description.— Length, 5¾ inches. Plumage, grayish-brown, paler below. Bill, much depressed and moderately broad; tail, about ⅓ length of wing, slightly notched. Adult male with barbs of outer web of outermost primary stiffened and abruptly recurved at tip, causing a file-like roughness when the finger is drawn along the quill from base toward tip.

Color.—ADULTS: Above, including sides of head and neck, plain grayish-brown of very nearly uniform tone throughout, but crown slightly darker than rump; *chin, throat, chest, sides, and flanks, plain pale grayish hair-brown* or brownish-gray, the chin and throat usually somewhat paler than chest and sides; rest of under parts, white; iris, brown. YOUNG: Similar to adults, but upper parts washed or overlaid by pale cinnamon or fawn color; chin, throat, and chest tinged with paler cinnamon or fawn color.

Nest and Eggs.— NEST: Located in a burrow in a sand bank, usually excavated by the birds themselves, wide enough to admit a man's arm, and somewhat broader than high, and from 3 to 5 feet long; large and bulky and usually composed of sticks, weed stalks, grass, and leaves. EGGS: 3 to 7, commonly 4 to 6, white.

Distribution.— Temperate North America, Mexico, and Central America as far as Costa Rica; breeding north to Connecticut, central Massachusetts, southeastern New York, Ontario, northern Indiana, southern Wisconsin, southern Minnesota, North Dakota, Montana, and British Columbia, south to Georgia, Louisiana, Texas, etc., and over greater part of Mexico, as far as State of Vera Cruz; casual northward to northern Michigan and Manitoba; in winter southward through Central America to Costa Rica, occasionally wintering on coast of South Carolina.

Photo by H. K. Job Courtesy of Outing Pub. Co.

ROUGH-WINGED SWALLOW AND ITS YOUNG

The Rough-winged Swallow is a much duller looking bird than the Bank Swallow, with which it is apt to be confused. It is a slower flying bird, and those who know it well can tell its flight many rods away; it has fewer twists and zigzags and more gliding and sailing. The bird is not nearly as common as the Barn or Bank or Tree Swallows, though the area over which it breeds extends from southern Canada to central Mexico and from ocean to ocean. They were formerly less common along the northern limit of the range than now, at least it is presumed they have spread further north; even now southern New Jersey has more Rough-wings than has northern New Jersey. Through central and western New York there has been a change in the numbers of this bird from accidental or very rare to fairly common in certain localities.

Their nesting sites are sometimes like those of the Bank Swallow, in sand banks, though it is rare for more than five or six pairs to be found in such a colony. Very often, however, their nests are under bridges or railway trestles or along the under sides of jutting walls; they have also been found in empty pipes and in an old Kingfisher's nest.

One of its associates is the Phœbe. Their nests are sometimes found very close to each other under the same bridge. While Phœbe rushes out upon its prey from a watching station, Rough-wing is up and down the stream deliberately capturing all the insects that get in his way. Occasionally he will rise into the air, going over instead of under the bridge, and sometimes off for a short excursion across a pasture or a meadow; but soon he will be back again doing police duty up and down the stream.

WAXWINGS AND SILKY FLYCATCHERS

Order *Passeres;* suborder *Oscines;* families *Bombycillidæ* and *Ptilogonatidæ*

THE Waxwings are a small family belonging to the larger group of singing birds; they are thus classified because they possess a vocal apparatus but they are not singers in the common acceptation of that term. They are found only in the northern hemisphere and there are but three species known. One of these is peculiar to Japan and the neighboring parts of Asia, another to North America, and a third is circumpolar.

Their wings are rather long and pointed; their tails are less than two-thirds as long as their wings, even or very slightly rounded, with the coverts unusually long, especially the lower which reach nearly to the end of the tail; the feathers of the lores are dense, soft, and velvet-like; there are no bristles at the corners of the mouth, and the head has a long crest of soft blended feathers. The plumage in general is soft and blended.

The prevailing color of the head, neck, and body is a soft fawn hue or wine-color changing to ashy on the rump and upper tail-coverts. The wings and tail are slaty, the tail being sharply tipped with yellow or red preceded by blackish. Two of the species have horny drop-shaped tips to the secondaries which resemble sealing wax. Some of the birds lack these red tips and have other variations from the normal coloration. Concerning this imperfect plumage Dr. Ridgway says: "I am at a loss for a satisfactory name for this plumage or an explanation of its true meaning. It is obviously quite independent of sex; and that it has nothing to do with the age of the specimen, or at least is not evidence of immature age, is almost equally certain. The only very young specimen of the present species that I have seen has the remiges [quill feathers of wing] and rectrices [tail-feathers] colored exactly as in the brightly colored plumage described above, except that the wax-like appendages to the secondaries are smaller. As a rule young birds of *B. cedrorum* [Cedar Waxwing] in the streaked plumage of the first summer lack the red appendages to the secondaries, but sometimes they are present, and the tail-band is usually quite as bright yellow as in adults; therefore it would seem that these two styles of plumage occur both

among fully adult and very young birds." The young are much duller than the adults and have the under parts streaked with brownish or dull grayish on a whitish ground.

The nests are bulky and are built in trees. They are constructed of small twigs, rootlets, and the like, mixed and lined with feathers and other soft materials. The eggs, 3 to 5 in number, are pale dull bluish or pale purplish-gray spotted and dotted with dark brown, black, and purplish. The young are cared for in the nest.

The Waxwings live among the trees and feed on berries, fruits, and insects.

Closely allied to the Waxwings are the Silky Flycatchers, a family that is peculiar to Central America and Mexico and which contains but four species. Of these only one extends its range into the United States. This is the Phainopepla. The Silky Flycatchers differ from the Waxwings in their rounded wings, the well-developed bristles at the corners of the mouth, and the wholly exposed nostrils. Their habits, however, are very similar.

CEDAR WAXWING

Bombycilla cedrorum *Vieillot*

A. O. U. Number 619 See Color Plate 89

Other Names.— Cherry Bird; Cedar Bird; Southern Waxwing; Carolina Waxwing; Canada Robin; Récollet.

General Description.— Length, 7¼ inches. Plumage of perfectly blended colors, the effect being a pinkish grayish-brown with yellow on abdomen and tip of tail.

Color.—ADULTS IN PERFECT PLUMAGE: Lores and wedge-shaped patch back of eye (connected with loral area above eye), velvety black; chin, dull black; rest of head, together with neck and chest, soft pinkish wood-brown or brownish-fawn color, darker on throat, where shading into the black or dusky of chin, slightly duller or grayer on hindneck; front portion of cheek region and a narrow line (sometimes obsolete) separating the brown of forehead from the black of lores, white; back and shoulders similar in color to hindneck but slightly grayer, the wing-coverts still grayer; secondaries and primary coverts slate-gray, the first with terminal appendages (flattened and expanded prolongations of the shaft) of scarlet, resembling red sealing wax; primaries, darker (slate color), edged with paler gray; rump, upper tail-coverts, and basal portion of tail, paler gray than secondaries, deepening toward end of tail into blackish-slate or slate-black, the tail tipped with a sharply defined band of lemon or chrome yellow; vinaceous-brown color of chest passing into a slightly paler and duller hue on breast and front portion of sides, and this into light yellowish-olive or dull olive-yellowish on flanks and back portion of sides; the abdomen, similar but paler (sometimes nearly white); bill, black; iris, brown; legs and feet, black. IMPERFECT PLUMAGE: Similar to the perfect plumage, as described above, but without red wax-like appendages to secondaries, and yellow band across tip of tail narrower and paler yellow.

Nest and Eggs.— NEST: Generally in an orchard, within 20 feet of the ground; rather bulky, constructed of twigs, leaves, grasses, strips of bark, twine, paper, and rags; lined with fine grass, horse-hair, or wool. EGGS: 3 to 5, bluish-gray to dull olive, marked with spots and blotches of sepia and dark purple.

Distribution.—Temperate North America in general; breeding from Virginia, western North Carolina, Kentucky, Kansas, New Mexico and Arizona (in mountains), and Oregon, northward to Prince Edward Island, southern shores of Hudson Bay, Manitoba, Saskatchewan, and British Columbia; wintering in whole of United States (in wooded districts), and migrating southward to Bahamas, Cuba, Little Cayman, and Jamaica, in West Indies, and through Mexico and Central America to highlands of Costa Rica; accidental in Bermudas and British Isles.

Drawing by R. I. Brasher

CEDAR WAXWING (⅔ nat. size)

An exquisite of bird land, and as polite as he is handsome

BOHEMIAN WAXWING *Bombycilla garrula* (Linnaeus)

FEMALE MALE

CEDAR WAXWING *Bombycilla cedrorum* Vieillot

FEMALE IMMATURE MALE

All ⅔ nat. size

BOHEMIAN WAXWING

Bombycilla garrula (*Linnæus*)

A. O. U. Number 618. See Color Plate 89

Other Names.— Black-throated Waxwing; Lapland Waxwing; Silktail.

General Description.— Length, 7½ inches. Plumage of perfectly blended colors, the general effect being a soft drab.

Color.— ADULTS IN PERFECT PLUMAGE: General color, soft drab, becoming more wine-colored forward, more grayish (pale grayish drab or drab-gray) on abdomen, sides and flanks, the rump and upper tail-coverts, nearly pure gray, forehead, region over eye, middle portion of cheeks, and *under tail-coverts, cinnamon-rufous;* lores, streak behind the eyes, chin, and upper throat velvety black; lower abdomen and anal region, pale yellowish or yellowish-white; secondaries, slate-gray, darker on inner webs, their outer webs broadly tipped with white and the shaft of each prolonged into an expanded tear-shaped or linear flattened glossy appendage resembling red sealing wax; primary coverts and primaries, blackish slate or slate-black, narrowly edged with slate-gray, the first broadly tipped on both webs with white; primaries with end portion of outer web sometimes with a narrow terminal margin of yellow or yellow and white; tail, slate-gray becoming darker toward end, broadly tipped with chrome-yellow; bill, black; iris, brown; legs and feet, black. IMPERFECT PLUMAGE: Similar to the perfect plumage, but markings on terminal portion of outer webs of primaries entirely white, red waxlike appendages to secondaries absent, and terminal band of tail, much paler yellow (straw-yellow or pale naples-yellow) and often much narrower.

Nest and Eggs. Similar to Cedar Waxwing's, but both larger.

Distribution.— Circumpolar. Northern parts of northern hemisphere, breeding in coniferous forests; southward in winter, in North America (irregularly), to Connecticut, Pennsylvania, Ohio, Indiana, Illinois, Kansas, Colorado, northern California, etc., casually to Arizona; breeding from Keewatin and Athabasca to Alaska.

If birds have no conception of manners, how does it happen that half a dozen Cedar Waxwings, sitting close together on a limb — which they often do — will pass a cherry along from one to another, down to the end of the line and back again, none of the birds making the slightest attempt to eat even part of the fruit? This little episode has been witnessed and reported by more than one thoroughly responsible observer of birds. What does it mean? If not politeness and generosity, then what? Mr. Forbush thinks the birds do it only when they are satiated; but how could he be sure of that condition? Obviously not unless he killed all of the birds and examined their stomachs, which, of course, nothing could induce him to do. It would be a sorry way to prove courtesy and kindness, and wouldn't prove anything after all. For if the bird had no room for another cherry, why didn't it simply drop the fruit instead of passing it along? Let the bird psychologists ponder these questions; for the bird-lover the answer is obvious. Besides, he will have observed many other evidences of a gentle and affectionate disposition in these beautiful creatures.

"Who can describe the marvelous beauty and elegance of this bird?" asks Mr. Forbush in an Educational Leaflet written for the National Association of Audubon Societies. "What other

Drawing by R. Bruce Horsfall

BOHEMIAN WAXWING (½ nat. size)

A bird of satiny plumage and elegance

is dressed in a robe of such delicate and silky texture? Those shades of blending beauty, velvety black, brightening into fawn, melting browns, shifting saffrons, quaker drabs, pale

Photo by H. K. Job Courtesy of Outing Pub. Co.

YOUNG CEDAR WAXWINGS

blue, and slate with trimmings of white and golden yellow, and the little red appendages on the wing, not found in any other family of birds —all, combined with its graceful form, give the bird an appearance of elegance and distinction peculiarly its own. Its mobile, erectile crest expresses every emotion. When lying loose and low upon the head, it signifies ease and comfort. Excitement or surprise erect it at once, and in fear it is pressed flat.

"In 1908, some fruit-growers in Vermont introduced into the Assembly a bill framed to allow them to shoot Cedar Waxwings. This bill was pushed with such vigor that it passed the House in spite of all the arguments that could be advanced regarding the usefulness of the birds. In the Senate, however, these arguments were dropped, and the senators were shown mounted specimens of the bird. That was enough; its beauty conquered and the bill was defeated."

"Like some other plump and well-fed personages," continues Mr. Forbush, "the Cedar Waxwing is good-natured, happy, tender-hearted, affectionate and blessed with a good disposition. It is fond of good company. When the nesting-season is past, each harmonious little family joins with others until the flock may number from thirty to sixty individuals. They fly in close order, and keep well together through the winter and spring until the nesting-season again arrives. Their manner of flight is rarely surpassed. Often they suddenly wheel as if at command and plunge swiftly downward, alighting in a compact band on the top of some leafless tree. They roam over the country like the Passenger Pigeon, never stopping long except where food is abundant. When hunting for caterpillars in the trees, they sometimes climb about like little Parrots. They often show their affectionate disposition by 'billing,' and by dressing one another's plumage as they sit in a row."

The Waxwings well illustrate the rule (to which, however, there are a few exceptions) that birds with conspicuous or strikingly beautiful plumage are rarely good singers, for their vocal capacities are limited to a faint sibilant note uttered both when the bird is in flight and at rest. Mr. Brewster records hearing the bird utter a series of loud, full notes, resembling those of the Tree Swallow, but these certainly are not common.

The Bohemian Waxwing is another beautiful member of this family, and has habits and a disposition similar to the Cedar Bird. It is comparatively rare, however, as it occurs only in the upper Mississippi valley and some of the mountain States and is infrequently seen at or near the Atlantic coast. GEORGE GLADDEN.

Photo by A. A. Allen

CEDAR WAXWING

At its nest in a thorn bush

The Cedar Waxwing's proverbial fondness for cherries has given it its popular name (Cherry Bird), and much complaint is made on account of the fruit it eats. Observation shows, however, that its depredations are confined to trees on which the fruit ripens earliest, while later

varieties are comparatively untouched. This is probably due to the fact that when wild fruits ripen they are preferred to cherries, and really constitute the bulk of the diet of the Cedar Waxwing.

In 152 stomachs examined animal matter formed only 13 per cent. and vegetable matter 87 per cent., showing that the bird is not wholly a fruit eater. With the exception of a few snails, all the animal food consisted of insects, mainly beetles — all but one more or less noxious, the famous elm leaf beetle being among the number. Bark or scale lice were found in several stomachs, while the rest of the animal food was made up of grasshoppers, bugs, and the like. Three nestlings had been fed almost entirely on insects.

PHAINOPEPLA

Phainopepla nitens (*Swainson*)

A. O. U. Number 620

Other Names.— Silky Flycatcher; Shining Crested Flycatcher; Shining Fly-snapper; Black-crested Flycatcher.

General Description.— Length, 7¾ inches. Male, glossy greenish blue-black; female, olive-gray. Crown, crested; bill, short and broad; wings, short and rounded; tail, long and fan-shaped.

Color.— ADULT MALE: Uniform glossy greenish blue-black; larger wing-coverts, wing, and tail-feathers less glossy black, edged with glossy dark greenish-blue or steel-gray; inner webs of primaries with middle portion extensively white; iris, red. ADULT FEMALE: Plain olivaceous mouse-gray, the longer feathers of crest, black edged with gray; wings and tail, dusky (the latter nearly black), faintly glossed with bronzy-greenish; lesser wing-coverts, margined with gray; middle coverts, broadly margined at the ends with white, the greater coverts edged with the same, the primaries, more narrowly edged with white or pale gray; tail-feathers edged with deeper gray, becoming white on outermost feathers; under tail-coverts broadly margined with white; inner webs of primaries, pale brownish-gray basally but without any definite light-colored area; iris, brown.

Nest and Eggs.— NEST: Usually placed in oaks, elders, or mesquite trees from 8 to 25 feet up; flat, saucer-shaped, compactly made of light-colored vegetable substances — plant fibers, blossoms, cottony fibers, small twigs. EGGS: 2 or 3, dull gray or greenish-white thickly spotted with brown, black, or lilac.

Distribution.— Southwestern United States, north, regularly, to southwestern Texas, New Mexico, southern Utah, southern Nevada and southern California, casually or irregularly to west-central Nevada, and to central and northern California; southward throughout peninsula of Lower California and on Mexican plateau.

The Phainopepla, or Shining Crested Flycatcher, is glossy bluish-black in color, with large white spots in the wings, which show only when flying. His mate is brownish gray. They are rather slim birds, nearly as big as a Catbird.

The Phainopepla is a beautiful fellow, with an elegant pointed crest, and plumage shining like satin. He sits up very straight on his perch, but he is a rather shy bird, and so not much is known about his ways. He is a real mountain lover, living on mountains, or in cañons, or on the borders of small streams of California, Arizona, and Texas.

As you see by one of his names, he is a Flycatcher. Sometimes thirty or forty of them may be seen in a flock, all engaged in catching flies. But, like the Cedar Bird, he is also fond of berries. When berries are ripe on the pepper-trees, he comes nearer to houses to feast on the beautiful red clusters. The song of this bird is fine, and, like many other birds, he sometimes utters a sweet whisper song.

The nest is placed on a branch, not very high up in a tree, and is often, perhaps always, made of flower stems with the flowers on, with fine strips of bark, grasses, and plant down.

Drawing by R. I. Brasher

PHAINOPEPLA (¼ nat. size)

The handsome and distinguished-looking male does the nest-building while his wife gads about

What is curious, and rare among birds, the male Phainopepla insists on making the nest himself. He generally allows his mate to come and look on, and greets her with joyous song, but he will not let her touch it till all is done. Sometimes he even drives her away. When all is ready for sitting, he lets her take her share of the work, but even then he appears to sit as much as she. Mrs. Bailey found a party of these birds on some pepper-trees, and to her we owe most of what we know of their habits.

OLIVE THORNE MILLER.

SHRIKES

Order *Passeres;* suborder *Oscines;* family *Laniidæ*

THAT the Shrikes should be "song birds," will seem incongruous to many who know how they come by their popular name of "Butcher Birds." But they are so classified by systematic ornithologists, and not without reason; for they not only possess vocal organs, but some of the species actually make use of those organs in producing a sort of warbled song. They are song birds of prey. The Shrike family (*Laniidæ*) have strongly hooked bills; rather short, rounded wings; the tail is nearly as long as the wing, or often longer, and rounded, graduated, or nearly even, but never forked; the plumage is soft, blended, the head never crested, though the feathers of the crown are sometimes rather longer than usual; the plumage is never with brilliant colors (in the typical members of the group) but with plain gray, brown, or rufous predominating, varied with black and white or pale wine-color; the sexes are usually alike in color and the young always have the plumage barred or transversely streaked. The range of the family includes the northern hemisphere in general and portions of the African and Indo-Malayan regions; in the western hemisphere no species are found south of Mexico. The family is rather numerously represented in the Old World, but only one genus and two species occur in America.

The Shrikes are peculiar in several of their habits, especially in their practice of impaling insects, small birds, and small mammals upon thorns. The purpose of this curious habit is not known with certainty; but the most plausible explanation seems to be that suggested by Mr. Seebohm (*History of British Birds and their Eggs*) which is that the Shrike, not having sufficiently powerful feet to hold its prey while it is being torn to pieces, therefore avails itself of the aid of a thorn (or, in some case, a crotch) to hold its food while being eaten. This does not, however, explain why the Shrike's victims are so often found in such positions unmutilated, as if placed there for future use or from mere cruelty.

The food of Shrikes consists of the larger insects (grasshoppers, beetles, etc.), spiders, small frogs, and reptiles, and frequently small birds and mammals, such as mice and shrews. Their favorite position, when resting, is the summit of an isolated small tree or stake, a telegraph wire, or some other prominent perch, from which they can command a wide view in all directions. When flying from one resting place to another the Shrike sweeps downward from its perch and then pursues an undulating flight a few feet above the surface of the ground.

The ordinary notes of the true Shrikes are harsh, often grating, but most of the species are capable of producing a variety of sounds, in some closely approximating a song; some, indeed, are possessed of considerable musical ability, which some persons, doubtless without reason, suppose to be practiced for the purpose of enticing small birds within their reach. Their bulky nests are placed in thickly branched trees, usually among thorny twigs or among intertwining vines, and are usually lined with soft feathers; the eggs, four to seven in number, are spotted or freckled with olive-brown on a whitish, buffy, or pale greenish ground color.

NORTHERN SHRIKE *Lanius borealis* Vieillot
IMMATURE ADULT MALE

MIGRANT SHRIKE *Lanius ludovicianus migrans* W. Palmer
IMMATURE ADULT

All ½ nat. size

NORTHERN SHRIKE

Lanius borealis *Vieillot*

A. O. U. Number 621 See Color Plate 90

Other Names.— Butcher Bird; Winter Butcher Bird; Northern Butcher Bird; Nine Killer; Winter Shrike; Great Northern Shrike.

General Description.— Length, 10 inches. Upper parts, light grayish-blue; under parts, white; wings and tail, black.

Color.— Above, plain light bluish-gray, changing to *white* on lower rump, upper tail-coverts, shoulders, eyebrow region, and front portion of *forehead;* ear region black, this extending forward beneath lower eyelid *and confluent with a black spot in front of the eye; lores, gray;* wings and tail, black; secondaries and innermost primaries, tipped with white (the latter more narrowly); base of primaries (except three outermost), white across both webs; showing as a patch; outermost tail-feather, white with a black spot near base of inner web; second tail-feather with base and extensive terminal portion, white; remaining tail-feathers, tipped with white; cheek region and under parts, white, the chest and sides of breast marked with wavy bars of dusky-grayish; bill, entirely black in summer, dusky horn color in winter; iris, brown; legs and feet, black.

Nest and Eggs.— Nest: In bushes or thorny trees, principally north of the United States; a large, rude structure of twigs, grasses, leaf and weed stems, lined thickly with moss and feathers. Eggs: 4 to 6, pale bluish green, spotted with brown and dull purple.

Distribution.— Northern North America; breeds from northwestern Alaska, northern Mackenzie, and northern Ungava to the base of the Alaska peninsula, central Saskatchewan, southern Ontario, and southern Quebec; winters south to central California, Arizona, New Mexico, Texas, Kentucky, and Virginia.

Drawing by R. Bruce Horsfall

NORTHERN SHRIKE (½ nat. size)

The Northern Shrike is about an inch longer than the Loggerhead, but the habits of the two birds are quite similar, though in disposition the present species seems to be the more savage of the two. Its appearance always causes consternation among the Sparrows and other small birds upon which it preys. It may be recognized at once by its strong colors—gray, black, and white, —and by its flight, which is peculiarly heavy and with rapid flapping. In the open it flies near the ground, and, like the Loggerhead, gains its perch by a sudden upward glide. The bird's song, heard usually in March or April, is a jumble of notes, some of them musical, the entire effort suggesting that of the Catbird. Its call-notes are harsh and unpleasant.

This Shrike seems to have all of the bad habits of its southern relative, but their odium is relieved by an apparent taste for English Sparrows.

LOGGERHEAD SHRIKE

Lanius ludovicianus ludovicianus *Linnæus*

A. O. U. Number 622

Other Names.— Southern Loggerhead Shrike; Southern Butcher Bird; Butcher Bird; French Mockingbird.

General Description.— Length, 9 inches. Upper parts, gray; under parts, white; wings and tail, black.

Color.— Adults: Above, plain slate-gray, darkest (approaching slate-color) on crown, fading gradually into paler gray on upper tail-coverts and into white on

outermost shoulder region; eye region, ear region, and *lores, black*, forming a conspicuous longitudinal patch on sides of head; *wings and tail, black*; secondaries tipped with white; entire under parts, including cheek region, white, the sides and flanks faintly shaded with gray; iris, brown; bill, legs, and feet, black. YOUNG: Above, brownish-gray, the crown and hindneck narrowly barred with narrow lines of darker gray and broader ones of pale buffy or brownish-gray; shoulders, lesser and middle wing-coverts, rump, and upper tail-coverts with more distinct narrow dusky bars and with the paler bars broader, more buffy; chest, sides, and flanks, pale buffy-grayish narrowly barred with dusky; bill and feet, brownish; otherwise similar to adults.

Nest and Eggs.— NEST: Located in thorny trees (hawthorns), hedges, or thickets, usually within 10 feet of ground; a large, carelessly constructed affair of corn stalks, weed stems, coarse grass, roots, paper, and wool and thickly lined with feathers, hair, or wool. EGGS: 5 to 7, grayish or creamy-white, thickly and evenly spotted and blotched with dull browns and lavender.

Distribution.— Coast district of South Carolina and Georgia to southern Florida and westward over the coastal plain of the Gulf States to Louisiana.

The Loggerhead Shrike is the common Shrike of the southeastern States, and over wide regions of its range it is a very abundant species. These "French Mockingbirds," as they are sometimes called, somewhat resemble the famous songster in size and color, but they are very different individuals in habits. When seen the Loggerhead is usually occupying a perch on the top of some small tree, stake, telephone pole, or fence post. From this lookout it will fly down now and then and seize the grasshopper, lizard, or baby snake, which its sharp eyes have detected in the grass often at a distance of 100 feet or more. In common with other Shrikes it possesses the habit of impaling on thorns or barbed wire such objects of food as it has no immediate use for. My observations have led me to believe that it rarely returns to eat what it has thus cached, unless driven to do so by hunger resulting from adverse fortunes of the chase. Undoubtedly the Loggerhead at times pushes its prey on a thorn to help hold it while eating. I once watched one impale a Chipping Sparrow on the sharp splinter of a broken tree and proceed to eat it then and there.

When approaching its nest this bird flies rapidly with quickly beating wings in a straight line, often sinking to within a few feet of the ground until close to the tree, when with a sharp upward turn it will climb the invisible ladder of the air to its nest. This structure is an exceedingly compact affair and often contains a thick lining of chicken feathers. The birds make a great outcry when one disturbs the nest, and will pop their bills in a manner that suggests the grinding of teeth in rage.

In the spring the Loggerhead Shrike often sings, but of all singing birds its musical production is about the poorest. It consists of a series of squeaky whistles, strangling gurgles, and high pitched pipings, all apparently produced with the greatest effort and labor. The notes are not loud and usually can be heard only a short distance. There seems to be no evidence, however, to indicate that the song does not produce the effect for which it is probably designed — that is, discomforting its rival and giving joy to the lady bird of its choice. T. GILBERT PEARSON.

There has been so much discussion of the Shrike's habits and diet that the following observations, concerning a captive Loggerhead, by Dr. Sylvester D. Judd, of the United States Biological Survey, recorded in his *Birds of a Maryland Farm*, are both valuable and interesting:

"The habit the bird has of impaling prey has been the subject of considerable speculation, some writers maintaining that it gibbets its victims alive for the pleasure of watching their death struggles, and others that it slaughters more game at a time than it can eat and hangs up the surplus to provide against a time of want. This theory of prudent foresight may explain why it kills more game than it can eat, but, as the experiments showed, it does not touch the real reason why it impales its prey.

"On the day after the Shrike in question was captured a dead mouse was offered it. The Shrike raised its wings, moved its tail up and down petulantly after the manner of the Phœbe, and then seized the mouse and dragged it about for several minutes, trying to wedge it into first one and then another corner of the cage. Failing in this effort, it tried to impale the mouse on the blunt broken end of branch that had been placed in the cage for a perch, but the body fell to the floor. Then it tried to hold the mouse with its feet and tear it to pieces, but its feet were too weak. A nail was now driven into the cage so as to expose the point. Immediately the Shrike impaled its prey, fixing it firmly, and then fell to tearing and eating ravenously. Several days later the nail was removed and a piece of beef was given to the Shrike. By dint of hard work it managed to hold the beef with its feet, so that it could bite off pieces; but it much preferred to

have me do the holding, when it would perch on my wrist and pull off mouthfuls in rapid succession. These experiments indicate that the Shrike is unable to tear to pieces food that is not securely fixed. Hawks can grip their food with their powerful talons and then easily tear it into pieces small enough to be swallowed, but the Shrike's feet have not a sufficiently vigorous clutch to permit this method.

"A series of experiments in feeding insects to this Shrike was also carried out. If the bird was very hungry it did not impale insects. When offered a grasshopper at such times, it would clutch it with one foot, and, resting the bend of its leg on the perch, bite off mouthfuls and swallow them. When not very hungry it impaled grasshoppers and caterpillars. Such prey as the thousand-legs, centipedes, house flies, and blowflies, and in a single instance, a mourning-cloak butterfly, it ate at a single gulp, but very large insects, such as tumblebugs, it always impaled. . . .

"A series of experiments with mice, birds, and other vertebrates was also made. When a live mouse was placed in the cage the Shrike gave chase, half running, half flying. It soon caught the animal by the loose skin of the back, but quickly let go because the little rodent turned on it savagely. In the next attack it seized the mouse by the back of the neck and bit through the skull into the base of the brain, causing instant death. (A Broad-winged Hawk experimented with at the same time always killed its victims with its talons, never touching them with its beak until they were dead.) A honey-locust perch, set with sharp thorns two inches long, had been put into the Shrike's cage, and on this it fixed the mouse, a thorn entering below the shoulder blade and passing out through the breast. Then (10 A. M.) it ate the brains. At 10.30 it picked twenty to thirty mouthfuls of hair from the hind quarters, made incisions and removed the skin, and then ate the large muscles. By 11.30 it had devoured the whole body, including viscera and skin. Several days later the Shrike dispatched a live English Sparrow about as it had the mouse, and impaled the carcass. Then it plucked the breast and ate the pectoral muscles, the lungs, and the heart. Live snakes and lizards were also fed to the Shrike. A toad was put into the cage, and it attacked it, but soon desisted in evident distress, caused probably by the toad's irritating secretions.

"It disgorged indigestible parts of its food in pellets, after the manner of Hawks and Owls. . . . When vertebrates had been eaten their bones were found inside the pellet and the fur, feathers, or scales outside."

The Migrant, or Northern Loggerhead, Shrike (*Lanius ludovicianus migrans*) is practically identical with the Loggerhead in coloration; the gray of the upper parts is paler and the under parts are less purely white. In proportions, however, it is decidedly different: the bill is much smaller and the tail is shorter than the wing instead of the other way round. It breeds from

Photo by Mrs. N. J Guoser Courtesy of Nat. Asso. Aud. Soc.

LOGGERHEAD SHRIKE

When seen, he is generally perched on the top of some small tree, stake, or the like

northern Minnesota, Wisconsin, Michigan, southern Ontario, southern Quebec, Maine, and New Brunswick south to eastern Kansas, southern Illinois, Kentucky, western North Carolina, and the interior of Virginia. In the winter it is found from southern New England and the Middle States south to Texas, Louisiana, and Mississippi. This Shrike is sometimes known as the Summer Butcher Bird. (See Color Plate 90.)

The White-rumped Shrike, or Mouse-bird (*Lanius ludovicianus excubitorides*) is similar to the Migrant Shrike, but the gray of the upper parts is decidedly paler and changes abruptly to white on the upper tail-coverts; the white of the under parts is purer; and in size it is a trifle larger. It is found in the arid districts of western North America south into Mexico.

The California, or Gambel's, Shrike (*Lanius ludovicianus gambeli*) is so much like the Mi-

grant Shrike that oftentimes it is not distinguishable if only its upper parts are seen, but its under parts are usually either browner or with transverse bars of pale gray or brownish-gray on the chest and the sides of the breast. It breeds in the Pacific coast district from southern British Columbia south to northern Lower California and winters south to Cape San Lucas and western Mexico. It destroys many injurious insects and is a decidedly beneficial specie.

The Island, or Anthony's, Shrike (*Lanius ludovicianus anthonyi*) is the darkest of the members of this species. In coloration it is like the Loggerhead Shrike, but the gray of the upper parts is nearly slate-gray, especially on the crown, and is more uniform, the shoulders almost wholly gray; the under parts are much more strongly tinged with gray; and the outer tail-feathers have much less white. Its range is limited to the Santa Barbara Islands and San Clemente Island, California, and Santa Margarita Island, Lower California.

VIREOS

Order *Passeres;* suborder *Oscines;* family *Vireonidæ*

VIREOS are sometimes called Greenlets; the Latin word *Vireo* means "I am green." They are small, active tree-haunting birds, like the Warblers. They are mainly insectivorous, though they feed also on fruits and berries. As a rule they are fair songsters (they are classed with the *Oscines*, or song birds), although some species are distinguished for the oddity rather than the melody of their notes. The wing (which is typically "nine-primaried") is always longer than the tail, and the plumage is never streaked, barred, or spotted, even in the young. The bill is variable as to relative size, but never longer than the head (usually very much shorter, often less than half as long); and is also very variable as to relative length, depth, and breadth. The wing is variable but always longer than the tail, which is even, slightly rounded, double rounded, or notched, the feathers being rather narrow.

The coloration of the family is decidedly variable, plain olive, whitish, buffy or yellowish hues prevailing, sometimes with bright green and yellow, rarely with blue on the head; usually plain olive, olive-green, or gray above (sometimes relieved by whitish or yellowish wing bars), and plain whitish or yellowish beneath.

As far as known the nest is suspended from a forked branch, and is composed of fine vegetable fibers, mosses, lichens and the like. The eggs are white, usually spotted. The range of the family extends over temperate and tropical America, except the Galapagos Archipelago. The family is peculiar to America, but chiefly tropical, and is represented by about seventy known species, referable to eight genera.

The feeding habits of all the Vireos are similar. Insect food is gleaned from the foliage of shrubs and trees. Probably more span worms and leaf rollers are destroyed by the Vireos than by any other one group of birds. However, they do not confine themselves to these particular species of insects, but, if a plague of any other kind occurs within their range, they will eat the invaders greedily.

RED-EYED VIREO

Vireosylva olivacea (*Linnæus*)

A. O. U. Number 624 See Color Plate 91

Other Names.— The Preacher; Red-eyed Greenlet; Red-eye; Little Hang-nest; Preacher Bird.

General Description.— Length, 6½ inches. Upper parts, grayish-green; under parts, white.

Color.— ADULTS: *Crown, plain mouse-gray, margined on the sides by a narrow line of black or dusky;* rest of upper parts, plain grayish olive-green; *over the eye, a broad stripe of dull white or very pale brownish-*

gray, across the lores, a dusky gray streak, becoming darker at the front corner of eye, and back of the eye a less distinct streak of dusky; ear, under the eye, and cheek regions, pale olive or pale brownish-olive, passing into olive-greenish on sides of neck; under parts, white, the sides and flanks tinged with pale yellowish-olive, the under tail-coverts, tinged with sulphur-yellow; under wing-coverts, pale sulphur-yellow; bill, grayish-dusky or blackish; iris, brownish-red; legs and feet, grayish-blue. YOUNG (FIRST PLUMAGE). Crown, hindneck, back, shoulders, rump, upper tail-coverts, and lesser wing-coverts plain vinaceous brown, varying from pale brown to pale fawn color or deep écru-drab; greater wing-coverts edged and narrowly tipped with pale olive-yellow; under parts white, the under tail-coverts and flanks tinged with sulphur-yellow; sides of head white or brownish-white.

Nest and Eggs.— NEST: In forks of smaller or large trees, usually within 10 feet of ground but often much higher; a beautiful, pensile structure of finely woven vegetable fiber, strips of bark, grasses, and cobwebs and lined with fine grasses, ornamented exteriorly with cocoons, bits of wasps' and spiders' nests. EGGS: 3 to 5, white, sparingly speckled with reddish-brown and umber.

Distribution.— Temperate North America in general, except arid districts; north to Nova Scotia, Prince Edward Island, Keewatin, Saskatchewan, and southern Mackenzie; west to British Columbia (both sides of Cascade range), Washington, Colorado, Utah, etc.; breeding south over whole of wooded region east of Rocky Mountains as far south as Caloosahatchee River, southern Florida, and as far west as Tom Green county, western Texas; wintering from southern Florida to Bahamas, and through Mexico, Central America and South America, as far as Brazil.

If vocal persistence counts for anything, this Vireo should certainly be one of the very best known of our birds, for the male often sings almost incessantly throughout the day, with intervals of rarely more than a few seconds between phrases of his song. Indeed, the pause between the phrases is so brief that to some ears the effect has been that of a continuous song, like the really connected warble of the Robin. To be sure, the Vireo's iteration of its phrases does slightly suggest the Robin's carol, but close attention will reveal that after all they are separate utterances, and not parts of a complete song. Otherwise one would be forced to admit that the song frequently lasted almost literally from early morn to dewy eve. This amazing persistence has earned for the Red-eye from Wilson Flagg the nickname of "Preacher Bird."

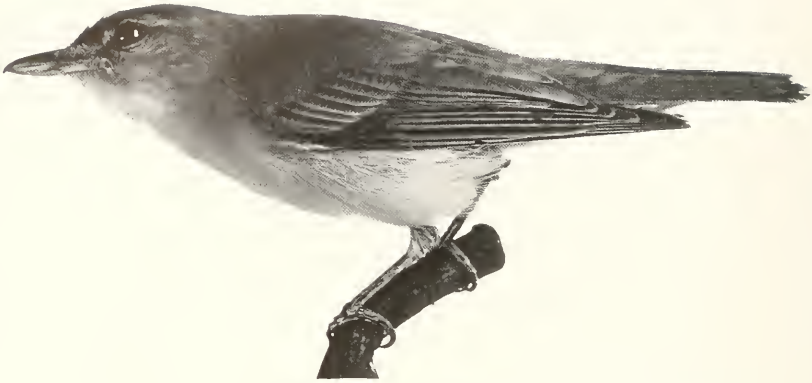
The Red-eye's song (if indeed it can properly be called a song at all), usually consists in the ceaseless repetition of two-, three-, or four-note phrases, one of which is delivered with the declarative and the other with the inquiring inflection, as if the bird were saying over and over again, and rather petulantly, "Here I am! Here I am! Don't you see me? Don't you hear me? Here I am! Don't you see me?" and so on *ad infinitum*. Indeed, so anxious is he, apparently, to be both heard and seen, that occasionally he will sit still for several minutes at a time — a most unwarbler-like trick — and give himself entirely to the repetition of his announcement and inquiry, meanwhile facing first one way and then the other, as public speakers do in addressing a big audience out of doors.

The Red-eye is frequently selected by the female Cowbird as the victim upon whom may be imposed the parental responsibilities which she is too lazy to discharge. Mr. Job records a remarkable instance of this kind, in which he photographed several times a female Red-eye

Photo by H. K. Job Courtesy of Outing Pub. Co.

RED-EYED VIREO ON ITS NEST

solicitously feeding two voracious young Cowbirds, after her own babies had evidently been smothered and thrown out of the nest by the pot-bellied interlopers.



Courtesy of Am. Mus. Nat. Hist.

RED-EYED VIREO (nat. size)

He has the manners of a public speaker

PHILADELPHIA VIREO

Vireosylva philadelphica *Cassin*

A. O. U. Number 630. See Color Plate 91

Other Names.—Philadelphia Greenlet; Brotherly-love Vireo.

General Description.—Length, 5 inches. Upper parts, grayish-green; under parts, yellowish.

Color.—Crown, plain mouse-gray; hindneck, back, shoulders, rump, and upper tail-coverts, *plain grayish olive-green;* wings and tail, dark brownish-gray or hair-brown with light olive-greenish edgings, these broader and more grayish on greater wing-coverts; lesser and middle wing-coverts, olive-gray; a distinct stripe of dull whitish over the eye; a triangular mark of dusky-gray on the lores and a streak of the same color behind the eye; ear and cheek regions, pale olive, becoming paler (sometimes whitish) beneath eye; under parts, mostly dull sulphur or primrose-yellow, the chin and abdomen whitish, the yellow deepest on chest; under wing-coverts, pale primrose-yellow; bill, dark horn color; iris, brown; legs and feet, bluish-gray.

Nest and Eggs.—NEST: In fork of willow or other tree, like rest of the genus. EGGS: 4, similar in size and markings to Red-eyed Vireo.

Distribution.—Eastern North America; breeds from northern and central Alberta, northern Manitoba, northern Ontario, New Brunswick, and Maine to northern Michigan and New Hampshire; winters from Cozumel Island and Guatemala to Veragua.

In its habits, and especially in its characteristic song, the Philadelphia Vireo resembles his much commoner relative, the Red-eye, which, however, is much the more persistent singer of the two. Mr. Brewster notes that "the Philadelphia Vireo has, however, one note which seems to be peculiarly its own, a very abrupt, double-syllabled utterance with a rising inflection, which comes in with the general song at irregular but not infrequent intervals." The popular name "Brotherly-love Vireo" is, of course, in reference to the use of the name Philadelphia, rather than in recognition of any marked degree of brotherly love displayed by the bird. The bird was discovered by Cassin, near Philadelphia, who named it in honor of that city.

WARBLING VIREO

Vireosylva gilva gilva (*Vieillot*)

A. O. U. Number 627. See Color Plate 91

Other Name.— Warbling Greenlet.

General Description.— Length, 5½ inches. Upper parts, greenish-gray; under parts, whitish.

Color.— ADULTS: Crown and hindneck, plain light mouse-gray or smoke-gray, becoming paler on forehead; back, shoulders, and lesser wing-coverts similar in color to crown but tinged (usually very faintly) with olive-green; lower back, rump, and upper tail-coverts, light *grayish olive-green*, or smoke-gray tinged with olive-green; wings (except lesser coverts) and tail, deep brownish-gray with pale brownish-gray edgings; a stripe of dull grayish-white or brownish-white over the eye and extending considerably beyond it; sides of head and sides of neck, pale buffy-gray or pale buffy-brownish; under parts, dull white centrally, *passing into pale buffy-olive or dull pale buffy-yellowish on sides and flanks*; under wing-coverts, very pale primrose-yellow or yellowish-white; bill, horn-brown; iris, brown; legs and feet, pale bluish-gray. YOUNG (FIRST PLUMAGE): Crown and hindneck, plain pale grayish-buff; back, shoulders, lesser and middle wing-coverts, and rump, light buffy-grayish; wings and tail, as in adults, but greater wing-coverts indistinctly tipped with dull brownish-buff or pale buffy-olive; the stripe over the eye, whitish or buffy-whitish but very indistinct, the sides of the head of similar, passing into deeper grayish-buffy on upper part of ear region; under parts, white.

Nest and Eggs.— NEST: On slender, horizontal branches, usually high, sometimes in the extreme top of large elms or other shade trees; a double compact structure, lacking exterior ornamentation of other species, otherwise built of similar material. EGGS: Normally 4, rarely 5, spotted with sepia, umber, and reddish-brown.

Distribution.— Eastern temperate North America; north to Nova Scotia, central Ontario, northern Manitoba, and southeastern Alberta, west to North Dakota, southeastern Montana, South Dakota, Kansas, Oklahoma, and Texas; breeding from the northern limit of its range to the Gulf States (Florida to Texas); winter home unknown, but south of the United States.

The Warbling Vireo seems to be especially fond of tall shade trees growing along village streets, but as it works mainly in the tops of the elms, oaks, and maples, it is much less frequently seen than heard. The sign of its presence, far aloft, is a singularly smooth and running warble, composed of seven or eight notes and suggesting the song of the Purple Finch, than which, however, it is much less hurried and more legato in its execution. Of its general character, Mr. Mathews says: "Although, note for note, the first phrase of Chopin's wild but beautiful *Impromptu Fantasia* does not correspond with this Vireo's song, it cannot be denied that there is a striking similarity in the construction of the two fragments. Both bits of music roll triumphantly toward a high note in a sort of spontaneous ebullition of feeling, and there the matter ends — with the Vireo; but Chopin goes on, and his sprightly embroidery of tones is ultimately succeeded by the substantial form of a slow and dignified melody."

Though this Vireo is a very persistent singer (Ralph Hoffmann estimates that he repeats his song more than four thousand times a day during the breeding season), there is remarkably little variation in the form and accent of the phrase. Almost invariably it is the same rippling run, delivered with the strongly marked crescendo which Mr. Mathews describes.

In western North America there is a smaller and darker form of this bird, known as the Western, or Swainson's, Warbling Vireo (*Vireosylva gilva swainsoni*).

YELLOW-THROATED VIREO

Lanivireo flavifrons (*Vieillot*)

A. O. U. Number 628. See Color Plate 91

Other Name.— Yellow-throated Greenlet.

General Description.— Length, 6 inches. Upper parts, yellowish-olive and gray; under parts, yellow and white.

Color.— ADULTS: Crown, hindneck, and back, plain *yellowish-olive*; sides of neck, ear and cheek regions, and sides of chest, plain yellowish olive-green; a stripe over the eye and a spot under it, front portion of cheek region, chin, throat, chest, and breast, *canary yellow*; abdomen, anal region, and under tail-coverts,

white; flanks, pale grayish; under wing-coverts, white tinged with yellow; lesser wing-coverts, shoulders, lower back, rump, and upper tail-coverts, plain slate-gray; wings (except lesser coverts) and tail, black; middle and greater wing-coverts (except innermost), broadly tipped with white, forming two conspicuous bands; inner wing quills broadly edged with white (this sometimes tinged with yellow); bill, grayish-black; iris, brown; legs and feet, light grayish-blue. YOUNG: Crown, hindneck, back, shoulders, lesser wing-coverts, rump, and upper tail-coverts, plain soft brownish-gray; line above the lores, eye ring, chin, throat, and chest, very pale yellow, shading into deeper yellow on cheek and under eye regions, and on lower portion of ear region; rest of under parts, white; wing-quills, tail-feathers, and larger wing-coverts as in adults, but edgings of secondaries, pale yellow.

Nest and Eggs.— NEST: Pensile, in fork of deciduous tree from 5 to 30 feet up, in secluded woods; constructed of narrow bark strips and grass compactly woven and artistically decorated with cocoons, spiders' nests, and lichens firmly tied on with spider-webs. EGGS: 3 to 5, usually 4, pinkish-white, more heavily marked than rest of genus, with umber-brown, sepia, and chestnut.

Distribution.— Eastern United States and southern British Provinces; north to Maine, Vermont, northern New York, southern Ontario, southern Quebec, and southern Manitoba west to edge of Great Plains; breeding south to Gulf coast, from northern Florida to southern Texas; in winter from southern Florida and Cuba southward through eastern Mexico and Central America to Colombia; casual in winter in Cuba and Bahamas.

Like the Warbling Vireo, the Yellow-throated species is essentially a tree-top bird, but probably it is much the more frequently seen of the two, for the reason that its plumage includes quite strong color contrasts, while the Warbling species' colors are comparatively inconspicuous. Also like that species, this bird frequently builds in shade trees, and from their topmost branches sends down its characteristic and frequently repeated song, which somewhat resembles that of the Red-eyed member of the family. A commonly expressed distinction between the two utterances is that the quality of the Red-eye's voice is soprano, while that of the Yellow-throat is contralto; but Mr. Mathews defines the difference more accurately by this analysis: "It is nearer the truth to say, rather, that the Yellow-throat has a violin quality to his voice, or better, a reedlike quality; Bradford Torrey calls it an 'organ tone.' At any rate there is no clear whistle to this Vireo's music, and on the contrary there is to the Red-eye's music. That is the whole matter in a nut-shell! For the rest I may add that the Yellow-throat's tempo is much slower and that he does not indulge in such an interminable amount of singing!"

Photo by A. A. Allen

YELLOW-THROATED VIREO

Incubating twenty-five feet from the ground in a chestnut tree

E. H. Eaton records having found this Warbler nesting in Central Park, New York city, and also in shade trees in Rochester, Medina, Canandaigua, and Buffalo, and adds this further interesting observation: "I have found that in some localities where it was common years ago it has disappeared, and made its appearance in other localities where it was formerly unknown. This shifting of its centers of abundance is difficult to explain, but I have noticed in certain small parks and about many groves and on certain streets where it has been carefully watched, this species has disappeared the next season after it was unsuccessful in rearing its young, due to its having been parasitized by the Cowbird. Probably this cause and other unfavorable circumstances, like the destruction of its brood by Screech Owls or unfavorable weather conditions, left no descendants to repeople the accustomed grove."

WARBLING VIREO *Vireosylva gilva gilva* (Vieillot)
ADULT
YOUNG
RED-EYED VIREO *Vireosylva olivacea* (Linnaeus)
YELLOW-THROATED VIREO *Lanivireo flavifrons* (Vieillot)
WHITE-EYED VIREO *Vireo griseus griseus* (Boddaert)

PHILADELPHIA VIREO
Vireosylva philadelphica Cassin
BLUE-HEADED VIREO
Lanivireo solitarius solitarius (Wilson)

All ½ nat. size

BLUE-HEADED VIREO

Lanivireo solitarius solitarius (*Wilson*)

A. O. U. Number 629. See Color Plate 91

Other Names.— Solitary Vireo; Blue-headed Greenlet.

General Description.— Length, 5¼ inches. Fore parts, slate; upper parts, olive-green; under parts, white.

Color.— ADULTS: *Crown, hindneck, sides of neck, regions around the ears and under the eyes, and cheeks, slate-color or deep slate-gray*, deepening into slate-blackish on back portion of lores; front and upper portions of lores and broad eye-ring (interrupted in the front by blackish loral mark), white; back, shoulders, rump, and upper tail-coverts, plain olive-green, the first usually intermixed with slate-gray; wings and tail, slate-blackish with light olive-green edgings, the outermost tail-feathers with outer web, white; middle and greater wing-coverts, broadly tipped with yellowish-white or pale sulphur-yellow, forming two distinct bands; wing-quills with outer webs broadly edged with yellowish-white or pale sulphur-yellow; chin, throat, and middle under parts of body, white; sides and flanks, mixed sulphur-yellow and olive-greenish, in broad, ill-defined stripes; under tail-coverts, pale sulphur-yellow, yellowish-white, or white faintly tinged with yellow; under wing-coverts pale sulphur-yellow; inner webs of wing- and tail-feathers edged with white; bill, black; iris, deep brown; legs and feet, grayish-blue. YOUNG: Similar to adults but duller in color, with gray of head much tinged with brown, olive-green of back, browner, and white of under parts less pure.

Nest and Eggs.— NEST: Pendant, in terminal forks of horizontal branches within 10 feet of ground; constructed of bark strips, leaves, weed stems, and caterpillar cocoons and firmly fastened with vegetable-strings and hair and lined with fine grasses. EGGS: 3 to 5, white or creamy, spotted with umber and chestnut, chiefly around large end.

Distribution.— Eastern North America; north to Prince Edward Island, Keewatin, Athabasca, and southern Mackenzie; west to border of the Great Plains; breeding southward to Connecticut, Pennsylvania, and North Dakota; wintering in the Gulf States, Cuba, and southward through eastern Mexico to Guatemala.

Drawing by R. I. Brasher

BLUE-HEADED VIREO (¼ nat. size)

Early to arrive in the spring and often remarkably tame

He whose ears are attuned to the harmonies of nature may find the Blue-headed or Solitary Vireo on warm April days or in early May in the wooded regions of most of the northeastern States. It may be recognized by its bluish head, the white ring around the eye, and the pure white throat. It heralds its presence at this time by its wild sweet song, a charming cadence of the wooded wilderness. Its notes seem more spiritual and less commonplace than those of the familiar Vireos of village and farmstead.

The bird itself is no more solitary in migration than other Vireos, although it is not numerous or gregarious, but in the nesting season it seeks the cool and grateful shade of pine or hemlock trees. It does not avoid mankind but dwells near him only when he lives in its favorite forest retreats. Like some other species it has proved so confiding at times as to allow a person to stroke its back as it sat on its beautiful pensile nest.

This Vireo is one of the conservators of the forest — a caterpillar hunter of renown — one of a number of arboreal birds which guard the trees

against the too destructive attacks of quickly multiplying scaly-winged hosts.

EDWARD HOWE FORBUSH.

There are in North America four regional varieties of the Blue-headed Vireo. The Mountain, or Mountain Solitary, Vireo (*Lanivireo solitarius alticola*) is larger and slightly darker in coloration, with the back more often mixed with gray and sometimes with more gray than olive-green; it breeds in the Alleghenies from western Maryland to eastern Tennessee and northern Georgia and winters in the lowlands from South Carolina to Florida. The Plumbeous Vireo (*Lanivireo solitarius plumbeus*) of the southern Rocky Mountain Region is very similar to the Mountain Vireo, but its back and shoulders are entirely gray, the rump and upper tail-coverts gray, tinged with olive-green and its sides and flanks are much more faintly washed with yellow; it breeds from northern Nevada, northern Utah, northeastern Wyoming and southwestern South Dakota south through Arizona and southwestern Texas to the mountains of Mexico. Cassin's Vireo (*Lanivireo solitarius cassini*) is much like the Blue-headed Vireo but averages slightly smaller and much duller in color; it breeds from central British Columbia, southwestern Alberta, and western Montana south through California and western Nevada to the San Pedro Martir Mountains, Lower California; in migration it is found in Utah, Arizona, Colorado, and New Mexico, and in winter in Mexico. The San Lucas, or San Lucas Solitary, Vireo (*Lanivireo solitarius lucasanus*) is like Cassin's Vireo but smaller and with decidedly larger bill and with more yellow and less olive on the sides and flanks; it is a resident of the Cape San Lucas region of Lower California.

Photo by J. Alden Loring

BLUE-HEADED VIREO

This bird is one of the conservators of the forest

BLACK-CAPPED VIREO

Vireo atricapillus *Woodhouse*

A. O. U. Number 630

Other Name.— Black-capped Greenlet.

General Description.— Length, 4¾ inches. Fore parts, black; upper parts, olive-green; under parts, white.

Color.— Lores and a broad eye-ring, white, the latter interrupted on upper eyelid; *rest of head and neck, except chin and throat, uniform black* (oldest birds?) or black and slate-gray (younger birds?); back, shoulders, rump, upper tail-coverts, and lesser wing-coverts, clear olive-green; wings (except lesser coverts) and tail, dull black or dusky with light olive-green edgings; the middle and greater wing-coverts broadly tipped with pale yellow, forming two conspicuous bands across wing; under parts, including chin and throat, white, passing into light olive-yellow or pale yellowish olive-green on sides and flanks; under wing-coverts sulphur or primrose-yellow; bill, black; iris, brownish-red; legs and feet, grayish-blue.

Nest and Eggs.— NEST: Usually suspended from forks of elm, oak, or mesquite saplings, within 6 feet of the ground; a perfectly woven structure of bark strips, grasses, skeleton leaves, spiders' webs, and caterpillar silk. EGGS: 3 to 4, pure white, unmarked.

Distribution.— Southwestern Kansas southward through Oklahoma and west-central Texas; southward in winter to Mexico, as far as State of Sinaloa.

Vireos are likely to be rather deliberate birds in comparison with the Warblers, but the Black-capped Vireo is decidedly energetic in its movements. Furthermore it is the single American member of its family with the head down to the throat black, except for the small white triangular patch running from the eye to the angle of the bill and the forehead.

The bird seems to have been first described in 1851 by Dr. Woodhouse, who took his specimen near the San Pedro River, 208 miles from San Antonio, and later by John J. Clark, naturalist of the Mexican Boundary Commission, who found it in Mexico near the locality in which it was seen by Dr. Woodhouse. Both observers had their attention attracted to the bird by its sharp and unmusical chirp. Its song, Mrs. Bailey says, is unusually varied for a Vireo, though of the general character of those of the White-eyed and Bell's Vireos, rather than that of the Warbling Vireo. "One song contained a run, and its last notes were liquid, loud, and emphatic."

WHITE-EYED VIREO

Vireo griseus griseus (*Boddaert*)

A. O. U. Number 631 See Color Plate 91

Other Names.— White-eyed Greenlet; Politician.

General Description.— Length, 5¼ inches. Upper parts, greenish-olive; under parts, white.

Color.— ADULTS: Above, plain greenish-olive or dull olive-green, usually passing into grayish on hindneck; wings and tail, dusky grayish-brown with light olive-green edgings, the middle and greater wing-coverts rather broadly tipped with pale yellow or yellowish-white, producing two distinct bands across wing; *a stripe above the lores and a narrow eye-ring of canary or sulphur-yellow; a dusky stripe across the lores;* ear and under eye regions and sides of neck, grayish-olive or olive-gray; chin, throat, central portion of chest and breast, abdomen, and under tail-coverts, dull white, passing into *pale yellow washed with olive, on sides and flanks,* the chest and breast tinged with yellow or grayish (or both), the anal region and shorter under tail-coverts also tinged with yellow; under wing-coverts pale yellow or yellowish-white; bill, black; iris, white; legs and feet, grayish-blue. YOUNG: Similar to adults, but upper parts, duller and browner; the stripe above the lores and the eye-ring, grayish-white or brownish-white instead of yellow; chin, throat, and chest, very pale gray or brownish-gray; sides and flanks, pale olive-yellow; iris, brownish (hazel).

Nest and Eggs.— NEST: In low bush, rarely more than 4 feet up, pensile; constructed of grass and bark strips and decorated exteriorly with brown or white spiders' nests, bits of rotten wood, or newspaper and rags and lined with fine grass and some hair. EGGS: 3 to 5, white, lightly spotted with dark purple and chestnut around large end.

Distribution.— Eastern United States; breeds from southeastern Nebraska, southern Wisconsin, New York, and Massachusetts to central Texas and central Florida; winters from Texas, Georgia, Florida, and South Carolina through eastern Mexico to Yucatan and Guatemala; casual north to Vermont, Ontario, and New Brunswick, and in Cuba.

Drawing by R. I. Brasher

WHITE-EYED VIREO (⅔ nat. size)

A voluble little fellow who gives intruders a piece of his mind

The White-eyed Vireo is one of the distinct characters of bird-land — pert, abusive, and sarcastic by turns, but always clever and amusing. *Chip-a-wee-o,* Mr. Torrey very accurately transliterated his characteristic and contemptuous salutation as you approach his thicket, and *Whip Tom Kelly* is a word-equivalent which Alexander Wilson found in use in the South —

though this injunction seems a much closer rendition of the Chewink's phrase. "Who are *you*, now?" the bird demanded of Mr. Torrey; and to others he has shouted: "Get out! Beat it!" almost as plainly and peremptorily as a New York policeman says "Gwan" to the corner-loafer.

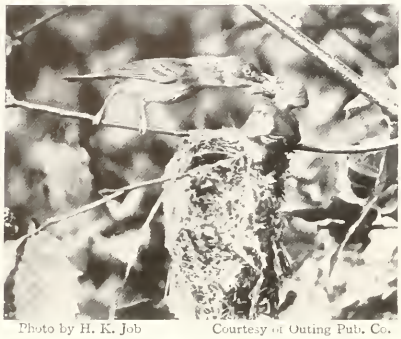


Photo by H. K. Job Courtesy of Outing Pub. Co.

WHITE-EYED VIREO FEEDING YOUNG

Not even the loquacious Yellow-breasted Chat has so sharp a tongue. Indeed, the Chat is, after all, essentially a clown and a nonsense-vendor, while the White-eye is tart and severe and decidedly inclined to be expostulatory and dictatorial. As Mr. Torrey says: "This Vireo is the very prince of stump-speakers — fluent, loud, and sarcastic — and is well called the politician, though it is a disappointment to learn that the title was given him not for his eloquence, but on account of his habit of putting pieces of newspaper into his nest."

Two regional varieties of the White-eyed Vireo are found within the boundaries of the United States. The Key West, or Maynard's, Vireo (*Vireo griseus maynardi*) is larger, the upper parts average grayer, sometimes with more gray than greenish-olive, and the yellow of sides and flanks averages much paler, sometimes consisting of a mere tinge or wash of pale olive-yellow; it is found in the Florida Keys and the coast district of Florida. The Small White-eyed Vireo (*Vireo griseus micrus*) is similar in color to the Key West Vireo but is even smaller than the White-eyed Vireo; it is found in the Rio Grande valley of Texas and northeastern Mexico.

BELL'S VIREO

Vireo belli belli *Audubon*

A. O. U. Number 633

Other Name.— Bell's Greenlet.

General Description.— Length, 5¼ inches. Upper parts, olive-green; under parts, whitish.

Color.—ADULTS: Crown and hindneck, dull grayish-brown, sometimes tinged with olive; rest of upper parts, dull olive-green or greenish-olive; wings and tail, deep grayish-brown with paler edgings; middle and greater wing-coverts (except the innermost) tipped with dull whitish, forming two bands; a narrow eye-ring and a streak above the lores of dull white; ear and under eye regions, pale grayish-brown or brownish-gray; a dusky mark at front corner of eyes; central under parts dull white tinged with buffy-yellowish, especially on chest, the sides and flanks light olive-yellow; under tail-coverts, pale sulphur-yellow; under wing-coverts yellowish-white; bill, horn-brown; iris, brown; legs and feet, bluish-gray. YOUNG: Much like adults, but crown and hindneck, soft drab; back and shoulders, dark drab; under parts nearly pure white with sides, flanks, and under tail-coverts tinged with sulphur-yellow, and wing-bands more distinct.

Nest and Eggs.— NEST: A neat, smoothly built structure of bark strips, plant fibers, and leaves and lined with fine grass, down, rootlets, and hair; suspended by brim from forks of small trees or bushes. EGGS: Commonly 4, though rarely sets of 8 are found; white, thinly spotted with brown around large end.

Distribution.— Prairie districts of Mississippi valley, from South Dakota, southern Minnesota, Iowa, northern Illinois, and northwestern Indiana southward to eastern Texas and Tamaulipas; in winter southward over greater part of Mexico and Guatemala; accidental in Massachusetts and New Hampshire.

In its normal range, which is very wide, Bell's Vireo is quite common. It seems to be especially fond of dense patches of brush and briers, and hedge-fences. In its habits, and especially in its song, it resembles the White-eyed Vireo more than any other member of its family. Dr. Coues thought that some of its notes were like those of the Bluebird in the spring, though more hurriedly

delivered. Mr. Ridgway likened the song to that of the White-eye, but considered the utterance more sputtering and in that respect similar to that of the House Wren.

The Texas Vireo (*Vireo belli medius*) is found in southwestern Texas and south into central Mexico; it is paler in coloration than its type species, Bell's Vireo, and its tail is relatively longer, its crown and hindneck are brownish-gray instead of grayish-brown, the olive of its upper parts, grayer, and its under parts, whiter.

The Least Vireo (*Vireo belli pusillus*) is a plain grayish little bird of the willows and thickets in central California, southwestern Nevada, and western Texas south to northern Lower California and the valley of Mexico. It is even paler and grayer than the Texas Vireo.

Another species of the Vireo family is the Gray Vireo (*Vireo vicinior*). It is very much like the Least Vireo but the wing-bars are missing. It is also very similar to the Plumbeous Vireo but its coloration is duller and lacks the sharp contrasts of the Plumbeous. The Gray Vireo makes its home in southern California, southern Nevada, the Grand Cañon of the Colorado, and southeastern Colorado south to Lower California, Sonora, and Durango.

WARBLERS

Order *Passeres*; suborder *Oscines*; family *Mniotiltidæ*

WARBLERS are essentially — most of them strictly — insectivorous birds of active habits. Most of them are arboreal, nesting and feeding among the trees and rarely descending to the ground; some are terrestrial, living much upon or near the ground, where they walk in the graceful "mincing" manner of a Wagtail or Pipit, meanwhile tilting the body, as if upon a pivot, and oscillating the tail in the same characteristic manner. Most of them are expert flycatchers. Others creep about the trunks and branches of trees as nimbly as a Nuthatch. The majority of them combine, in various degrees, these several habits.

As a rule the Warblers are birds of beautiful plumage, though their attractiveness in this respect consists in the tasteful arrangement or "pattern" of the colors rather than in their brilliancy. Yellow is the most common and characteristic hue, though this is usually relieved by markings or areas of black, gray, olive-green, or white, usually by two or more of these colors; red is not infrequent, grayish-blue less common; while pure blue, green, and purple are never present, and the plumage is never glossy. There is generally a sexual difference of plumage, and very often the young are different from either adult.

Many of the Warblers have attractive songs; but perhaps the majority, at least among the North American species, are songsters of very ordinary or inferior merit.

The group of Warblers is peculiar to America, where it is the second largest family. It represents the *Sylviidæ* and *Muscicapidæ* of the eastern hemisphere. Over 150 species and subspecies belonging to 21 genera are recognized. It contains a larger proportion of one-type species than most families of song-birds, nearly one-half of the genera being each represented by but a single known species.

There is probably no finer tribute to the beneficial character of these birds than that of Dr. Elliott Coues, who said: "With tireless industry do the Warblers befriend the human race; their unconscious zeal plays due part in the nice adjustment of Nature's forces, helping to bring about the balance of vegetable and insect life, without which agriculture would be in vain. They visit the orchard when the apple and pear, the peach, plum, and cherry are in bloom, seeming to revel carelessly amid the sweet-scented and delicately-tinted blossoms, but never faltering in their good work. They peer into the crevices of the bark, scrutinize each leaf, and explore the very heart of the buds, to detect, drag forth, and destroy these tiny creatures, singly insignificant, collectively a scourge, which prey upon the hopes of the fruit-grower and which, if undisturbed, would bring his care to naught. Some Warblers flit incessantly in the terminal foliage of the tallest trees; others hug close

to the scored trunks and gnarled boughs of the forest kings; some peep from the thicket, the coppice, the impenetrable mantle of shrubbery that decks tiny watercourses, playing at hide-and-seek with all comers; others more humble still descend to the ground, where they glide with pretty, mincing steps and affected turning of the head this way and that, their delicate flesh-tinted feet just stirring the layer of withered leaves with which a past season carpeted the ground."

BLACK AND WHITE WARBLER

Mniotilta varia (*Linnæus*)

A. O. U. Number 636 See Color Plate 92

Other Names.— Black and White Creeper; Blue and White Striped or Pied Creeper; Black and White Creeping Warbler; Creeping Warbler; Striped Warbler; Varied Creeping Warbler; Whitepoll Warbler.

General Description.— Length, 5½ inches. Plumage, black and white in stripes. Bill, shorter than head and very slender; wings, long and pointed; tail, even or very slightly forked, the feathers rather narrow.

Color.—ADULT MALE: Crown with a broad center stripe of white and two still broader lateral stripes of black, slightly glossed with blue; *rest of upper parts* (except wing- and tail-feathers), *slightly glossy blue-black, the back and shoulders streaked with white*, middle and greater wing-coverts, broadly tipped with white (forming two conspicuous bands), and inner wing-quills, broadly edged with white; secondaries and primaries, grayish black narrowly edged with gray; middle tail-feathers, black centrally, gray laterally, the gray broader; other tail-feathers, grayish-black narrowly edged with gray, the two outermost with a large space of white on inner web, and all with inner webs edged with white; eye-ring and a broad stripe above the eyes, white; below this an elongated patch of slightly glossy blue-black covering lores and sides of head; a broad white cheek stripe; under parts, mainly white, but throat usually black; sides, from chest to flanks, inclusive, broadly streaked or striped with blue-black; under tail-coverts, black centrally, broadly margined with white; bill, black; iris, brown; legs and feet, dusky horn color. ADULT FEMALE: Smaller and much duller in color, the white everywhere more or less tinged with buffy-brownish; the throat, white; the lores, wholly pale grayish; the sides of head pale buffy-grayish margined above by a narrow streak behind eye of black; streaks of sides much less distinct, becoming grayish on sides of chest; and flanks strongly tinged with brownish-buff; bill, black.

Nest and Eggs.—NEST: On ground at foot of tree, bush, stump, or rock, among upturned roots or alongside a log; rather bulky; constructed of dead leaves, strips of bark, grasses, weed stems, lined with hair; sometimes partly roofed, in half-hearted imitation of the Oven-bird's home. EGGS: Normally 5, white or creamy speckled and spotted all over with brown and chestnut, the markings usually collecting in wreath formation around large end.

Distribution.— Eastern North America, north to upper Mackenzie valley, Hudson Bay, breeding southward to Virginia, Tennessee, Louisiana, Texas, (probably to upper sections of other Gulf States); wintering from the Gulf States southward throughout the West Indies, Mexico, and Central America to Colombia and Venezuela; accidental in California and in the Bermudas.

Bird-names of popular origin often reveal queer misapprehensions as to the birds concerned, but the name "Black and White Creeper," by which this bird has commonly been known, has the advantage of being accurately descriptive. For the bird certainly is black and white; and furthermore it creeps about on the tree trunks and branches with even more celerity and skill

Photo by H. K. Job

MALE BLACK AND WHITE WARBLER FEEDING YOUNG

BLACK AND WHITE WARBLER *Mniotilta varia* (Linnaeus)
MALE FEMALE
WATER-THRUSH
Seiurus noveboracensis noveboracensis (Gmelin)
OVEN-BIRD *Seiurus aurocapillus* (Linnaeus)
ADULT JUVENAL
All ½ nat. size

WORM-EATING WARBLER
Helmitheros vermivorus (Gmelin)
PROTHONOTARY WARBLER
Protonotaria citrea (Boddaert)
LOUISIANA WATER-THRUSH
Seiurus motacilla Vieillot

than is shown by the Brown Creeper, for example. That bird does not attempt to come down a tree trunk head foremost, nor to circle a horizontal limb, feats which are managed with Nuthatch-like ease by the Black and White Warbler. Altogether the Warbler is a much better "creeper" than the Creeper is. However, for reasons which doubtless seem good and sufficient to them, the ornithologists have seen fit to eliminate from the bird's name the term which describes its most characteristic habit, and the inclusion of which certainly would have been of much assistance in identifying the species.

The literal translation of its scientific name, is very appropriate: *Mniotilta* means moss-plucking and refers to its habit of searching in the moss on trees for its insect food; *varia* is variegated and, of course, has reference to the striped effect of its coloration.

The terms "wiry" and "thin" are usually employed in describing this bird's songs, and are perhaps as descriptive as any that could be used. One song consists of eight or ten notes of the same pitch and tone uttered in closely connected couplets, the syllables being like *see* and *weee*. The other, which is less frequently heard, though it is longer than the one first mentioned, has about the same beginning, but shows more variation in its development, while the tone, a sort of lisping whistle, is mellower and more musical. About the most that can truthfully be said of these utterances is that the bird seems to have made the best use of a feeble and none too musical instrument.

PROTHONOTARY WARBLER

Protonotaria citrea (*Boddaert*)

A. O. U. Number 637. See Color Plate 92

Other Names.—Golden Warbler; Golden Swamp Warbler; Willow Warbler.

General Description.—Length, 5½ inches. Fore and under parts, yellow; upper parts, yellowish olive-green. Bill, shorter than head, wedge-shaped; wing, rather long and with long pointed tip; tail, slightly rounded.

Color.—ADULT MALE: *Head, neck, and under parts (except under tail-coverts), rich yellow*, the head sometimes tinged or flecked with cadmium orange; back and shoulders, plain yellowish olive-green, this sometimes extending forward over hindneck and back of head; rump, upper tail-coverts, wing-coverts, and inner wing-feathers, plain gray; secondaries, primaries, and tail-feathers, black, edged with slate-gray, the inner webs of tail-feathers (except middle pair), white tipped with blackish; under tail-coverts, white; under wing-coverts, white, tinged with yellow; inner webs of wing-feathers, edged with white; bill, black in summer, lighter colored in winter; iris, brown; legs and feet, dusky. ADULT FEMALE: Similar to the male, but smaller and much duller in color; olive-green of back extended forward over hindneck and crown; yellow of under parts, less intense, tinged with olive, and becoming much paler on abdomen and flanks, the latter strongly tinged with olive; bill, dusky in summer, lighter colored in winter.

Nest and Eggs.—NEST: Usually in deserted hole of a Downy Woodpecker or Chickadee, otherwise in almost any cavity or hole, from 2 to 15 feet up (averaging about 5) and almost always in a stump standing or leaning over water; carefully and thickly lined with moss. EGGS: 5 to 7, commonly 6, varying from creamy-white to buffy-white, glossy, heavily blotched with rich chestnut, lavender, and purple.

Distribution.—More southern portions of eastern United States, breeding from Gulf States (northern Florida to eastern Texas), north to Virginia, southern Ohio, Indiana, southern Michigan, northeastern Illinois, Iowa, southeastern Minnesota, eastern Nebraska, etc., occasionally northward to Massachusetts, southeastern New York, Ontario, and Wisconsin, casually to Maine and New Brunswick; south in winter to Cuba and through eastern Mexico and Central America to Colombia, Venezuela, and Trinidad.

The Prothonotary Warbler is a southern Warbler whose range does not extend as far as Canada. It is common in the Ohio valley and in the Carolinas and on down in the bottom lands of the Mississippi and the rivers that flow into the Gulf of Mexico. But everywhere it must have its home by running water and generally in the willows. It prefers those districts which suffer from spring floods. This has given it the names of the Golden Swamp Warbler and Willow Warbler. There is no use looking for the bird away from a stream or swamp. It does not stray away. With its sweet and penetrating *peet, tweet, tweet, tweet* or *sweet, sweet, sweet, sweet*, it tells the traveler that water is near. When the bird is found he is generally industriously going

over and over the area he has chosen, feeding up and down among the bushes and trees and never very far from the nest.

The nesting site is very likely to be an old Woodpecker hole but often a ledge or crotch serves as well. When the hole is deep it is filled to within a few inches of the top, generally with green moss, but with more shallow places the nest building is a much less laborious task.

The bird is rarely seen in the migrating Warbler flocks, for most of these flocks are off for far northern climes. The Prothonotary on the other hand has a special taste for more southern streams and swamp lands.

SWAINSON'S WARBLER

Helinaia swainsoni (*Audubon*)

A. O. U. Number 638

General Description.—Length, 6 inches. Upper parts, olive; under parts, yellowish. Bill, nearly as long as head, narrow, wedge-shaped; wings, moderately long and rather pointed; tail, slightly forked or double rounded, the feathers broad.

Color.—ADULTS (SEXES ALIKE): Crown, plain brown, sometimes with an indistinct center streak of paler, or an indication of one; back, shoulders, rump, upper tail-coverts, and wing-coverts, plain olive; inner wing-quills, warmer brown; secondaries and primaries, dusky edged with light brown or olive; tail, plain olive brown; a narrow stripe over eye of light yellowish-buff; a triangular spot of dusky in front of eye; a streak behind eye of brownish; sides of head otherwise, pale buffy-brownish; under parts, pale dull yellowish, shaded with olive-grayish laterally; bill, light brownish; iris, brown; legs and feet, pale flesh color.

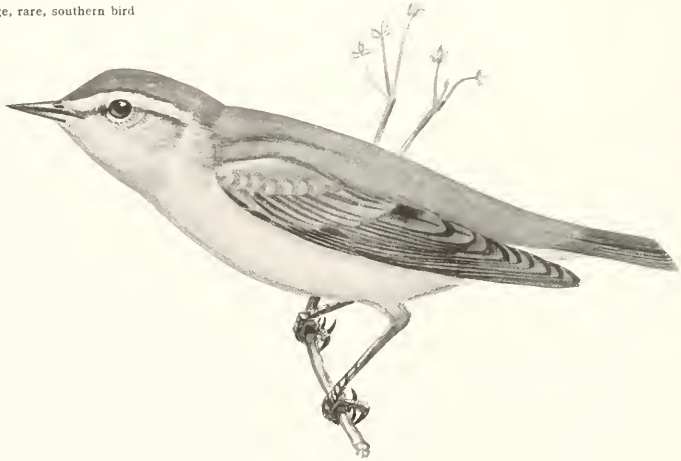
Nest and Eggs.—NEST: Usually built among canes, sometimes in small bushes, from three to ten feet above the ground; generally in swampy locations but sometimes on high land some distance from water, and is a remarkably large affair of water-soaked sweet gum, water oak, pepperidge or holly leaves, lined with fine pine needles and moss. EGGS: 3, rarely 4, plain dull white, creamy or bluish-white, without markings.

Distribution.—Southeastern United States; breeds from southeastern Missouri, southern Illinois, southern Indiana, and southeastern Virginia south to Louisiana and northern Florida; winters in Jamaica; migrates through Cuba and the Bahamas; casual in Nebraska, Texas, and Vera Cruz.

Drawing by R. I. Brasher

SWAINSON'S WARBLER (¾ nat. size)

A strange, rare, southern bird



Swainson's Warbler is a strange, rare, southern bird. He is so strange that one hardly expects to call such a plain brown and white bird gliding so gracefully along under the bushes a Warbler. He is so rare that one may search for days and not find him. Even in the South, one has to confine one's search for him to the coastal swamps from the Dismal Swamp of Virginia down through the "pineland gall" of the Carolinas, west in the vine-tangled semitropical verdure of the Gulf coast and up the Mississippi and some of its tributaries in the thickets of the bottom lands.

In describing the song, Mr. William Brewster says it is "a performance so remarkable that it can scarcely fail to attract the dullest ear, while it is not likely to be soon forgotten. It consists of a series of clear, ringing whistles, the first four uttered rather slowly and in the same key, the remaining five or six given more rapidly, and in an evenly descending scale, like those of the Cañon Wren. . . . In general effect it recalls the song of the Water-thrush. . . . It is very loud, very rich, very beautiful, while it has an indescribably tender quality that thrills the senses after the sound has ceased. . . . Although a rarely fervent and ecstatic songster, our little friend is also a fitful and uncertain one. You may wait for hours near his retreat even in early morning or late afternoon, without hearing a note. But when the inspiration comes he floods the woods with music, one song often following another so quickly that there is scarce a pause for breath between."

WORM-EATING WARBLER

Helmitheros vermivorus (*Gmelin*)

A. O. U. Number 639. See Color Plate 92

Other Names.—Worm-eater; Worm-eating Swamp Warbler.

General Description.—Length, 5½ inches. Upper parts, grayish olive-green; under parts, buffy. Bill, decidedly shorter than head, wedge-shaped; wings, rather long and pointed; tail, even or very slightly rounded, the feathers moderately broad.

Color.—ADULTS (SEXES ALIKE): *Crown with two broad lateral stripes of black and a center one of olive-buff*; rest of upper parts, plain grayish olive-green; a broad stripe over eye of pale buff, margined beneath by a rather broad streak of black behind eye; a triangular spot of the same, or dusky grayish, in front of eye; sides of head below this black line, with entire under parts, pale dull buffy, deepest on chest, paler on throat and abdomen (the latter sometimes nearly white), tinged with grayish-olive on flanks; under tail-coverts, pale olive-grayish, edged and broadly tipped with pale yellowish-buff; bill, brown; iris, brown; legs and feet, pale brownish flesh color.

Nest and Eggs.—NEST: On the ground, generally on a woody hillside; constructed of dead leaves and

WORM-EATING WARBLER (⅓ nat. size)

He spends most of his time on the ground or within a few feet of it

Courtesy of Am. Mus. Nat. Hist

nearly always lined with red flower-stalks of hair moss. Eggs: 3 to 6, usually 4, white thinly or thickly marked with spots and blotches of Indian red, lavender, and chestnut sometimes wreathed but more often evenly distributed.

Distribution.—Eastern United States, more common southerly, breeding northward to southern Connecticut, southeastern New York (lower Hudson valley), Pennsylvania, southern Wisconsin (vicinity of Racine), etc., occasional in Massachusetts; in migration casually to Massachusetts, Vermont, western New York, southern Ontario, and southern Wisconsin; winters south to Bahamas, Cuba, Jamaica, and through eastern Mexico and Central America to Panama.

The Worm-eating Warbler is distinctly a ground Warbler, a very differently acting bird from most of the Warbler family. Most of them are rather excitable, nervous birds of the tree-tops. The Worm-eater is a quiet bird that spends most of his time on the ground or within a few feet of it, walking, not running; and sometimes creeping along a tree trunk like the Brown Creeper or the Black and White Warbler. On the ground this bird is rather cocky-acting, stepping along deliberately under the huckleberry bushes or other dense undergrowth, with his tail slightly raised. He has a smart and jaunty air and also a shy disposition that reminds one of a Thrush at his sprightliest.

The Worm-eating Warbler is not so rare as it has been credited. Where bird students have given time to search his haunts, he has been found fairly common as far north as southern New England, southern Michigan, and Nebraska. But the search for him has to be made in ravines and on dry forested hillsides where the undergrowth makes a convenient nesting site. This bird loves his home locality. It has been frequently observed how year after year the birds will come back to the same thicket, building their new nest within sight of the old ones.

Its ordinary song is a weak affair, closely resembling that of the Chipping Sparrow, but Mr. Burroughs says: "The bird has a flight song, uttered near sundown, nearly as brilliant as that of the Oven-bird." (MS.) The call is a sharp *dzt*, and he who watches closely and silently in the tangle when it is heard may be rewarded by a sight of this bird with the buff and black striped head.

BLUE-WINGED WARBLER

Vermivora pinus (*Linnæus*).

A. O. U. Number 641 See Color Plate 93

Other Names.—Blue-Winged Yellow Warbler; Blue-Winged Swamp Warbler.

General Description.—Length, 4¾ inches. Upper parts, olive-green; under parts, lemon-yellow. Bill, shorter than head, narrowly wedge-shaped, the tip very acute; wings, moderately long; tail, about ¾ length of wing, even or nearly even, the feathers narrow.

Color.—Adult Male: *Forehead and crown, bright lemon yellow; back of head, hindneck, back, shoulders, rump, and upper tail-coverts, bright olive-green*, more

Photo by H. K. Job Courtesy of Outing Pub. Co.

BLUE-WINGED WARBLER FEEDING YOUNG

yellowish on rump, the upper tail-coverts tinged with gray; wing-coverts and inner wing-feathers, gray, the middle and greater coverts usually tipped with *white, forming two bands*; secondaries and primaries, dusky edged with gray, their inner webs broadly edged with white; tail, gray, the three outermost feathers with inner webs, extensively white, the fourth, sometimes even the fifth, occasionally showing a terminal white spot; lower half of lores and a pointed streak back of eye, black; sides of head below this black streak, with entire lower parts (except under tail-coverts), clear lemon, the sides and flanks slightly tinged with olive-green; under tail-coverts and under wing-coverts, white; bill, black in summer, brownish and paler below in winter; iris, brown; legs and feet, horn-brownish. ADULT FEMALE: Similar to the male but duller in color; olive-green of upper parts covering crown, sometimes the forehead also; lores and mark back of eye, dusky grayish instead of black; gray of wing-coverts and inner wing-feathers tinged with olive-green.

Nest and Eggs.— NEST: On the ground, in a dense tuft of grass or ferns, in clearings or new growth of saplings; constructed of leaves and strips of wild grape bark, lined with very fine grass. EGGS: 4 to 6, usually 5, white or creamy white specked and spotted with sepia brown, lavender, and purple.

Distribution.— Eastern United States; breeding northward to southern Connecticut, southeastern New York, Pennsylvania, northern Ohio, northern Indiana, northern Illinois, southern Iowa, eastern Nebraska, etc.; occasional straggler to Massachusetts, Michigan, and Minnesota; southward in winter through eastern Mexico, Guatemala, Nicaragua, to Colombia.

A prolonged, lisping, drawling "song" of only two notes, *z-zee-e, z-zee-e,*— from the shrubbery along roads or brushy pastures or the open border of woods, proclaims to the initiated the presence of this tiny bird, of rather unique, though not conspicuous, personality. Yellow is its dominating color, but its grayish wings show that it is not the Yellow Warbler. Its note is very characteristic, and not forgotten as easily as are the notes of many other Warblers.

Most of the tribe incline to be northerly in summer distribution, whereas this is one of the small group which are distinctly southerly. Southern Connecticut is as far north along the Atlantic coast as it is at all common, but there it is found in good numbers during the nesting season. Were it not for the characteristic note, it would be considered a much rarer bird than it really is.

In its general manner of conducting itself, it is not different from various other Warblers. It is a busy searcher of foliage and shrubbery, generally not very high up, yet more commonly off the ground, though it readily descends upon occasion. I have often seen it in second-growth woodland, especially where it is a little moist or swampy, but less in deep forests. It is distinctly a bird of the open edge of woodland and of overgrown pastures.

The nest is on the ground, just in from the edge of the woods, in small clearings or openings in low woods, in a bushy pasture, or by a weedy roadside. Usually it is under a small bunch of weeds, often by some little sprout, down which the bird can descend to enter the nest. The structure is deep, rather loose in texture, and is characterized by having its sides formed of dead leaves which curl inward and arch over the top of the nest, helping to conceal it.

Through knowing just the sort of a place to look, I have found more of these nests than of

Photo by H. K. Job

BLUE-WINGED WARBLER

At its nest, on the ground, just in from the edge of the woods

any others of the less-known Warblers. The method is to use a long switch and tap the little thick clumps of weed or small brush in the proper locations, to flush the female, which is a very close sitter.

I shall never forget the first nest which I discovered. Determined to learn the secret, I started one day to beat out a nest. All day long I thrashed the low cover, especially where old

fields and second-growth woods adjoined. Toward night I had walked a number of miles and knocked at the door of some tens of thousands of possible hiding places, without results. Standing in a little opening in low woods, just in from a scrub pasture, I decided reluctantly to quit, and mechanically brought down the switch on a handy clump of weeds. The yellow flash which followed gave me a wonderful thrill. In a moment I was gazing with rapture at the five pinkish-white eggs, sparsely ringed about the larger end, and at the deep, well-concealed nest-cup with its typical converging arch of upright dry leaves.

HERBERT K. JOB.

GOLDEN-WINGED WARBLER

Vermivora chrysoptera (*Linnæus*)

A. O. U. Number 642 See Color Plate 93

Other Names.— Golden-winged Flycatcher; Golden-winged Swamp Warbler; Blue Golden-winged Warbler.

General Description.— Length, 4¾ inches. Upper parts, gray; under parts, white. Bill, shorter than head, narrowly wedge-shaped, the tip very acute; wings, moderately long; tail, about ¾ length of wing, even or nearly even, the feathers narrow.

Color.— ADULT MALE: Forehead and crown, lemon-yellow, sides of head, white (sometimes this carried forward over eyes or even to along sides of forehead); rest of upper parts, including middle pair of tail-feathers, plain gray; exposed portion of middle and greater wing-coverts, mostly light lemon-yellow, *forming a large and conspicuous patch on the wing;* wing-feathers and tail-feathers (except middle pair of latter), slate-blackish, edged with gray, the secondaries usually slightly tinged with olive-green; inner webs of three outermost tail-feathers, extensively white terminally; lores, space below eye, sides of head, and throat (sometimes chin also), uniform black; a broad cheek stripe and under parts of body, white, the latter shaded with gray laterally; bill, black; iris, brown; legs and feet, dark brownish. ADULT FEMALE: Similar to adult male but duller in color, with black of throat and sides of head replaced by gray; yellow of forehead and crown, less distinct, sometimes (in younger individuals?) replaced by olive-green; gray of upper parts and of sides usually tinged with olive-green; white of breast and abdomen, duller, often tinged with olive-yellow, especially in winter.

Nest and Eggs.— NEST: On the ground beneath a bunch of weeds or ferns in clearings; neatly made of thin blades of swamp grass, weed bark, rootlets, lined with fine rounded reddish grass. EGGS: 4 or 5, rarely 6, more spherical than average of other Warblers, dull white speckled with chestnut, burnt umber, and lilac-gray.

Distribution.— Eastern United States north regularly to Massachusetts, New York, southwestern Ontario, northern Michigan, southern Minnesota, etc., casually (?) to Manitoba, breeding southward to northern New Jersey, Pennsylvania, northern Indiana, northern and central Illinois, etc., and southward along Allegheny Mountains to South Carolina, and eastern Tennessee; south in winter to Cuba and through eastern Mexico and Central America to Colombia.

The Golden-winged Warbler is an interesting species in that peculiar group of *Vermivora* Warblers distinguished by the peculiar trait of fertile hybridization. Four distinct species are implicated in this mixed breeding, namely, first, the Blue-winged Warbler, which is in reality a blue-winged yellow Warbler; second, the Golden-wing, which is in reality a yellow-winged blue Warbler; third, Lawrence's, which is a blue-winged Yellow with the Golden-wing's throat patch; and fourth, Brewster's, which is a yellow-winged blue, or Golden-winged, Warbler without the throat patch. Birds of this group of Warblers seem to mate indiscriminately and produce fertile descendants. None of them can be said to be very common birds. Indeed Lawrence's and Brewster's are decidedly rare. Some bird students attempt to ignore the crosses. It is immaterial whether the crosses are scientifically recognizable as varieties, or species, or mere hybrids; they do exist as intermediate forms and therefore deserve some kind of name. Lawrence's, Brewster's, and Golden-Wings are all rarer than Blue-wings, and are the most involved in this most unusual condition in the wild-bird world. A hybrid may have either the song of the Golden-wing or the Blue-wing. Most of the hybrids are found in Connecticut and in and near the lower Hudson valley.

Golden-winged Warblers make their homes in open, bushy country, generally near streams or ponds, and not heavily shaded by too many trees. The Golden-wing song is a sweet *zee-i-zee* or *zee-u-zwee* given three or four times and repeated many times when the bird, posing on top of a bush in the spring sunshine, bursts into joyous enthusiasm.

L. NELSON NICHOLS.

BLUE-WINGED WARBLER *Vermivora pinus* (Linnaeus)

BREWSTER'S WARBLER
Vermivora leucobronchalis (Brewster)

LAWRENCE'S WARBLER
Vermivora lawrencei (Herrick)

GOLDEN-WINGED WARBLER *Vermivora chrysoptera* (Linnaeus)
MALE FEMALE

ORANGE-CROWNED WARBLER
Vermivora celata celata (Say)

NASHVILLE WARBLER *Vermivora rubricapilla ruficapilla* (Wilson)
MALE IMMATURE

TENNESSEE WARBLER *Vermivora peregrina* (Wilson)
IMMATURE MALE

All ½ nat. size

LUCY'S WARBLER

Vermivora luciæ (*J. G. Cooper*)

A. O. U. Number 643

General Description.— Length, 4½ inches. Upper parts, gray; under parts, whitish. Bill, shorter than head, narrowly wedge-shaped, the tip very acute; wings, moderately long; tail, about ¾ length of wing, even or nearly even, the feathers narrow.

Color.— ADULT MALE: *Above, plain mouse-gray;* crown, chestnut, the feathers tipped (except in worn plumage) with gray; *upper tail-coverts, bright chestnut;* lores, eye-ring, and entire under parts, white tinged with pale brownish gray laterally and also tinged with buff, especially on chest; bill, dusky horn color; iris, brown; legs and feet, dusky. ADULT FEMALE: Similar to the male and not always distinguishable, but usually with the chestnut crown-patch more restricted (rarely obsolete) and chestnut of both crown-patch and upper tail-coverts lighter or less intense.

Nest and Eggs.— NEST: Usually in deserted Woodpecker holes, behind loose bark of trees, in the giant cactus, or under roots along stream banks, sometimes in knot-holes or any sort of crevice, from 2 to 20 feet above ground; constructed of fine grass, leaves, and rootlets, and lined with horse-hair and feathers. EGGS: 3 to 5, white or creamy, handsomely wreathed around large end with chestnut and umber.

Distribution.— Southwestern United States and Mexico; breeds in Santa Clara valley, Utah, and Arizona; winters in western Mexico south to Jalisco.

Drawing by R. I. Brasher

LUCY'S WARBLER (¼ nat. size)

A little-known Warbler of the southwestern United States and Mexico

The comparatively little known Lucy's Warbler frequents chiefly willow and mesquite thickets in river bottoms and in generally uninhabited regions. According to one observer (Stevens) the specimens he saw "although active and restless were not at all shy," to which he adds that the birds "were continually in motion, flying from tree to tree, and occasionally visiting some low brush in the vicinity." Dr. Gambel, who observed the bird on Santa Catalina Island said its song resembled the syllables *er-r,r,r,r-she-up* in the form of a low, sweet trill.

Mr. Finley found this Warbler quite abundant in the mesquite a few miles south of Tucson. He found several nests one afternoon, each of which was built in behind a chunk of loose bark on the side of a tree about three or four feet from the ground.

NASHVILLE WARBLER

Vermivora rubricapilla rubricapilla (*Wilson*)

A. O. U. Number 645 See Color Plate 93

Other Names.— Nashville Swamp Warbler; Birch Warbler; Red-crowned Warbler.

General Description.— Length, 4¾ inches. Upper parts, gray and olive-green; under parts, yellow. Bill, shorter than head, narrowly wedge-shaped, the tip very acute; wings, moderately long; tail, about ¾ length of wing, even or nearly even, the feathers narrow.

Color.—Adult Male: *Head, hindneck, sides of head and neck, plain gray;* crown, chestnut, the feathers tipped with gray; rest of *upper parts, plain olive-green,* brightest on rump and upper tail-coverts; lores, pale grayish; *a conspicuous white eye-ring;* cheeks and *under parts, bright gamboge yellow* becoming white on lower abdomen and anal region, tinged with olive on sides and flanks, especially the latter; bill, brownish-black; iris, brown; legs and feet, horn-color. Adult Female: Similar to the adult male, but duller in color, and with little, if any, chestnut on crown.

Nest and Eggs.— Nest: On or imbedded in the ground, usually at the foot of a bush in open woods; constructed of leaves, strips of bark, and grass, but sometimes entirely of pine needles, lined with fine grasses and hair. Eggs: 3 or 4, white to creamy speckled with minute dots of reddish-brown, brown, and lilac, more numerous around large end.

Distribution.— Eastern North America, breeding from Massachusetts, Connecticut, northern New Jersey, Pennsylvania, northern Illinois, Nebraska, etc., northward to Grand Menan and the Great Slave Lake district; southward in migration over more southern United States (east of the Rocky Mountains) through eastern Mexico to Guatemala.

The Nashville Warbler was discovered by Alexander Wilson at Nashville, Tennessee, and reported by him in his *American Ornithology.* This bird has ever since borne the name Nashville Warbler. It is not a rare bird in New England if one goes to the birches to look for it. But it is always in birches or poplars that it makes its home; and, if any bird names itself from its preference for a special home-site, this bird certainly names itself the Birch Warbler.

Wintering in Texas and Mexico, this bird follows high ground to its breeding area, keeping well west of the Alleghenies and leaving a few scattered pairs over the central States while the main body goes on to New England. It is therefore a very rare bird in the South Atlantic States, and not at all common at Nashville.

This plain olive-green bird with yellowish under parts seldom comes near enough to show the chestnut crown-patch which gives him his name of *rubricapilla,* and only bird students are familiar with that detail. As he is a nervous bird flitting about in the birches, he does not attract much attention.

The song is a combination of *ke-tsee* with Chipping-Sparrow-like trillings. It has been compared to the song of the Yellow Warbler.

On the Pacific coast there is a variety known as the Calaveras Warbler (*Vermivora rubricapilla gutturalis*) that is brighter and richer colored. They make their homes in manzanita, huckleberry, and short trees, but do not confine themselves to one kind of tree as do the birds of the eastern variety. L. Nelson Nichols.

ORANGE-CROWNED WARBLER

Vermivora celata celata (*Say*)

A. O. U. Number 646 See Color Plate 93

Other Name.— Orange-crown.

General Description.— Length, 5 inches. Upper parts, olive-green; under parts, olive-yellowish. Bill, shorter than head, narrowly wedge-shaped, the tip very acute; wings, moderately long; tail, about ¾ length of wing, even or nearly even, the feathers narrow.

Color.— Adult Male: *Above, plain grayish olive-green,* becoming brighter, more yellowish olive-green, on rump and upper tail-coverts; *crown with a tawny patch,* this color mostly concealed (except in worn midsummer plumage) by grayish olive tips to the feathers; a narrow stripe over eye, eyelids, and general color of *under parts, pale olive-yellowish,* becoming paler (sometimes whitish) on lower portion of abdomen; sides of head, sides of neck, and sides of breast,

light grayish olive-green, the chest (sometimes throat also) indistinctly streaked with the same; an indistinct triangular spot or streak of dusky in front of eye and a still less distinct short streak back of eye; under tail-coverts and under wing-coverts, pale yellow; bill, dusky horn color; iris, brown; legs and feet, brownish horn color. ADULT FEMALE: Similar to the adult male in coloration, and not always distinguishable (?), but usually the colors are slightly duller, with the tawny-ochraceous crown-patch more restricted, sometimes obsolete.

Nest and Eggs.— NEST: On the ground, among clumps of bushes, in the side of a bank and usually hidden by leaves; large for size of bird and constructed of long, coarse strips of bark loosely interwoven with a few spears of dried grass or plant stems and warmly lined with hair and fur of small animals. EGGS: 4 to 6, white or creamy, finely speckled with chestnut.

Distribution.— Alaska (except coast district from Kodiak eastward and southward) and throughout Rocky Mountain district of British America and United States, breeding southward to Manitoba and high mountains of New Mexico; during migration southward to eastern and central Mexico and eastward over Mississippi valley and Gulf States to South Carolina, Georgia, and Florida; occasionally during migration in New England and Middle Atlantic States (numerous records), and in southern California.

The Orange-crowned Warbler is a bird of the far Northwest. While one plain olive and yellow bird, the Nashville Warbler, is migrating in the spring from southwest to northeast, one of his nearest relatives, another plain olive and yellow bird, this Orange-crowned Warbler, is migrating across the continent in a way to mark a cross (×) on the map of North America. The Orange-crown's route is from the South Atlantic States northwest to Manitoba, the Great Slave Lake, the fur country, and on into Alaska. It is a bird of the upper tree-tops, continually flitting about and uttering a simple song of a few sweet trills of the Chipping Sparrow nature. It seems to be a great wanderer in the fall. It has been seen in many places far from the regular migration route. In January, 1917, an Orange-crowned Warbler was seen on Staten Island, N. Y. Its presence in the central and northeastern States may, therefore, be more common than is supposed. Bird students have found the bird all over the United States.

To this species must of course be added its varieties of the West. The Lutescent Warbler (*Vermivora celata lutescens*) is not a very rare bird in California and is noticeably a much yellower bird than the Orange-crown. It is, therefore, more easily recognized than the Orange-crown. The Dusky Warbler (*Vermivora celata sordida*) of the Santa Barbara Islands is but a dusky variety of the Lutescent.

L. NELSON NICHOLS.

TENNESSEE WARBLER

Vermivora peregrina (*Wilson*)

A. O. U. Number 647 See Color Plate 93

Other Names.— Swamp Warbler; Tennessee Swamp Warbler.

General Description.— Length, 4¾ inches. Upper parts, olive-green; under parts, white. Bill, shorter than head, narrowly wedge-shaped, the tip very acute; wings, moderately long; tail, less than ¾ length of wing, decidedly forked, the feathers narrow.

Color.— ADULT MALE: *Crown and hindneck, plain gray;* rest of upper parts, plain olive-green, brightest on rump; wings, dusky, the secondaries edged with olive-green, the primaries with pale gray (edge of outermost primary, white); tail, dull gray, the outer webs of feathers, edged with olive-green, the inner webs, edged with white, that of outermost feather usually with a white terminal spot; lores and short streak over eye, white, the former with a dusky wedge-shaped streak in front of eye; a small streak back of eye, dusky; sides of head, grayish; below eye, cheeks, and under parts, white, the sides and flanks shaded with gray; under wing-coverts, white; bill, brownish black; iris, brown; legs and feet, horn color. ADULT FEMALE: Similar to the adult male in coloration, but with gray of crown and hindneck never so pure, being usually tinged with olive-green, and with streak above eye and under parts tinged with yellow.

Nest and Eggs.— NEST: Placed on or close to the ground in heavy growths of spruce, balsam, or kindred trees; constructed of fine vegetable fiber, grass, leaves, and moss, lined with hair. EGGS: 4 or 5, white, spotted with reddish-brown and purplish markings.

Distribution.— Eastern North America; breeds from upper Yukon valley, southern Mackenzie, central Keewatin, southern Ungava, and Anticosti Island south to southern British Columbia, southern Alberta, Manitoba, northern Minnesota, Ontario, New York (Adirondacks), northern Maine, and New Hampshire; winters from Oaxaca to Colombia and Venezuela; in migration occurs mainly in the Mississippi valley; rare on the Atlantic slope; occasional in Florida and Cuba; accidental in California.

The Tennessee Warbler is not a common bird over the eastern part of the United States even in migration. In the Mississippi basin it is fairly common in both spring and fall migrations. But the color and habits of the bird make it discouraging to study. What can one do with a nervous, fidgety lot of dull-colored birds flitting about in the tree-tops with not a wing-bar, nor breast marking, nor change of the tail color? Only when one is so located that he looks down into the tops of trees at the precise moment that a Tennessee Warbler is passing through his part of the country, is it possible to study that bird with any degree of satisfaction.

This Warbler is very rarely found breeding in the United States. Of the great number of Tennessee Warblers that pass on into Canada in the spring, some do not stop to breed in Canada, but, reaching the upper waters of the Yukon, go on down that valley into Alaska, where there are probably more breeding Tennessee Warblers than in any other part of the United States. Although it is in fact a Canadian bird, even in Canada it is not very well known.

"The food of this species is of peculiar interest because it is one of the few Warblers which have proved to be destructive to fruits in a peculiar way. The Tennessee Warbler is known to puncture ripe or ripening grapes and to suck the juice, thereby causing the decay of the berries so punctured and attracting yellow-jackets, bees, and other nectar-loving insects so that whole clusters are sometimes ruined. This work was long attributed to Orioles, Catbirds, and various other species, but has now been definitely fixed on the present species and cannot be denied. Doubtless in some cases the damage so done is considerable, but usually the birds are so scarce that the amount of fruit damaged is absolutely insignificant. Like numerous other Warblers, this species eats the berries of sumac and poison ivy, and, disgorging the seeds afterward, of course spreads these poisonous plants. Except for these two habits the bird is undoubtedly beneficial, since its food consists mainly of insects, among which are immense numbers of leaf-destroying forms, and in particular, plant-lice and the minute leaf-rollers and other forms which few but the Warblers capture." (Barrows.)

PARULA WARBLER

Compsothlypis americana americana (*Linnæus*)

A. O. U. Number 648 See Color Plate 94

Other Names.— Blue Yellow-backed Warbler; Blue Yellowback; Finch Creeper; Southern Parula Warbler.

General Description.— Length, 4½ inches. Upper parts, bluish-gray and yellowish olive-green; under parts, yellow and white. Bill, much shorter than head, narrowly wedge-shaped, and acute; wings, moderately long; tail, forked.

Color.— Adult Male: Head and neck, except chin, throat, lores, and eyelids, dull grayish-blue; lores darker, usually blackish; a small white spot or streak on rear of upper eyelid, and a larger spot of white on lower eyelid; *back between the shoulders, yellowish olive-green, forming a triangular patch;* shoulders, lesser wing-coverts, rump, upper tail-coverts, and middle tail-feathers, plain bluish-gray, rather lighter than color of head; middle and greater wing-coverts, wings, and tail-feathers (except middle pair) blackish or dusky, edged with bluish-gray, the middle and greater wing-coverts broadly tipped with white, *forming two conspicuous bands*, the front one broadest; inner webs of three outermost tail-feathers with a large spot of white near the tip, that on the exterior feather much the largest; chin, throat, and breast, gamboge-yellow; chest, varying from plain yellowish-tawny to deep tawny (the feathers margined with yellow) usually dusky across the upper portion, sometimes forming a rather distinct narrow band, the yellow of the throat also sometimes tinged with tawny; sides of breast, bluish-gray, sometimes tinged with pale chestnut behind; rest of under parts, white, the sides and flanks tinged with grayish; bill, black above, bright yellow below; iris, brown; legs and feet, brownish. Adult Female: Similar to the adult male, but much duller in color, especially the under parts; gray of upper parts, less bluish; yellow of throat, chest, and breast, paler and duller, the chest only faintly, if at all, tinged with tawny, never with a distinct (usually without any) dusky band across upper portion.

Nest and Eggs.— Nest: In a bunch of Usnea moss; constructed by interweaving the strands, adding some soft plant fibers, and lining it with filaments of the same material; entrance on the side. Eggs: Usually 4, sometimes as many as 7, creamy-white somewhat glossy, thickly speckled with brown or reddish-brown.

Distribution.— More southern portions of Atlantic and eastern Gulf Coast districts of United States, breeding from Florida, Georgia, and Alabama, at least to coast of Virginia, probably to Delaware and southern New Jersey; occasional farther northward; also occasional in more southern portions of the interior; apparently wintering mainly in Florida and northern West Indies.

PARULA WARBLER
Compsothlypis americana americana (Linnaeus)
MALE
FEMALE

CERULEAN WARBLER
Dendroica cerulea (Wilson)
MALE
FEMALE

MYRTLE WARBLER *Dendroica coronata* (Linnaeus)
MALE
FEMALE

BLACK-THROATED BLUE WARBLER
Dendroica caerulescens caerulescens (Gmelin)
MALE
FEMALE

CANADA WARBLER
Wilsonia canadensis (Linnaeus)
MALE
FEMALE

All ½ nat size

The Parula Warbler has been called the Blue Yellowback, but the name "Parula," meaning a diminutive Parus or Titmouse, was given it because of the Chickadee-like habit of searching for its food; it often hangs to the under side of a limb as though that were as easy a way as right side up. The species has been divided into Northern and Southern Parulas, overlapping in New Jersey and Maryland. The distinction is in the larger size and deeper, richer coloration of the northern variety (*Compsothlypis americana usneæ*). The bird is a fairly common species in the May migration in the northern States.

If one watches long enough he is pretty sure to see the Parula hanging from a limb, and then this little grayish-blue bird will be found to have a very peculiar yellowish-green patch on its back. The peculiar watered-silk effect of the blue and green back is the distinctive marking of this Warbler.

In Florida and the other southern States, where there is a great amount of Spanish moss hanging from the trees, the Parulas are common, and the buzzing song of *chipper, chipper, chipper, chippee-ee-ee-ee* is repeated many times a day. During the breeding season this "sizzling trill," as Dr. Chapman calls it, is one of the most noticeable bird songs in the eastern United States.

Moss is the characteristic nesting site of the bird over its whole area. Usnea moss or beard moss is locally common, but is rare or absent over other large areas. In the moss regions, and there only, will Parula homes be found. The bird is not quite such an artist as he is often given credit for. Frequently the pendants of moss are very attractively formed and often hang by long strong stems so that they swing easily in the breeze. A pair has only to make a hole into a mass of moss, bring in enough material to make a safe bottom for the nest, and the building is done.

L. Nelson Nichols.

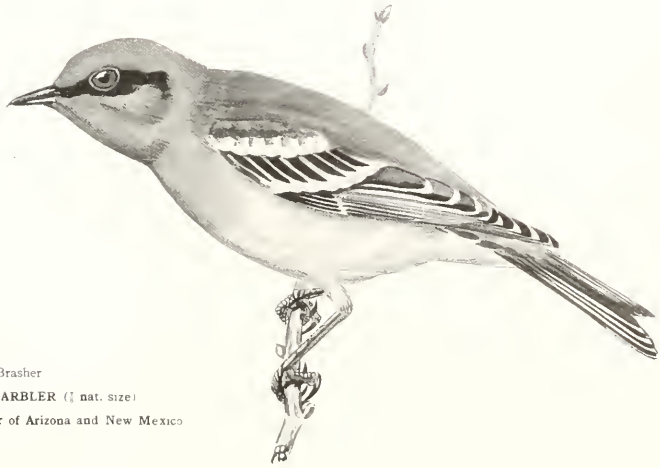
OLIVE WARBLER

Peucedramus olivaceus (*Giraud*)

A. O. U. Number 651

General Description.—Length, 5 inches. Fore parts, orange; upper parts, olive-green and gray; under parts, whitish. Bill, shorter than head, tapering to a point; wings, long and pointed, wing-tip very long; tail, deeply notched.

Color.—Adult Male: *Head, neck, and chest, plain orange-ochraceous*, the sides of head with a broad band of black, involving the lores, eye ring, and sides of head; lower hindneck and extreme upper back, yellowish olive-green, this sometimes extending over whole



Drawing by R. I. Brasher

OLIVE WARBLER (¾ nat. size)

A mountain singer of Arizona and New Mexico

hindneck to, and including, the back of head; back, shoulders, rump, and upper tail-coverts, plain mouse-gray; wings and tail, dull blackish; middle and greater wing-coverts, broadly tipped with white, forming two conspicuous bands, of which the one nearer the front is the broader; innermost greater coverts edged with light grayish olive-green; secondaries edged with more yellowish olive-green; primaries narrowly edged with whitish, *the seventh to the third white at base, forming a conspicuous spot;* tail-feathers narrowly edged with pale grayish, usually becoming more olive-greenish basally; inner webs of two outermost tail-feathers largely white, this occupying much the greater part on exterior feathers, the outer web of which is also largely white; middle of breast and abdomen dull white, shading on sides and flanks into light olive-grayish; under tail-coverts, white; bill, blackish; iris, brown; legs and feet, dusky. ADULT FEMALE: Crown and hindneck, olive-greenish; sides of neck, head, throat, and chest, dull sulphur-yellow, the chin and throat sometimes nearly white; ear region, dusky, at least in part; lores, dull grayish; below eye, mixed dusky-grayish and dull whitish; rest of plumage, as in adult male, but white wing-bars narrower, and white spot at base of middle primaries smaller, sometimes obsolete.

Nest and Eggs.— NEST: In the fork of a conifer, from 30 to 50 feet up; very neatly constructed of weed stalks, moss, vegetable down, and lichens and tied with spider webs. EGGS: 3 or 4, olive-gray or sage-green, thickly covered with black specks, sometimes almost obscuring the ground color.

Distribution.— Highlands of Mexico, Guatemala, and southwestern United States; north to central Arizona.

The Olive Warbler is confined in the United States practically to the mountainous regions of Arizona and New Mexico. A few may linger in Arizona after the breeding season or even in winter, but mostly the species spends the colder months in the highlands of Mexico and Guatemala. In the pine forests which it frequents, its movements suggest those of the Pine Warbler, according to Dr. Chapman, who found it feeding "leisurely among the terminal branches or hopping along the twigs without displaying the activity of the fluttering Warblers." The same observer thought that the bird's call-note, as he heard it at Las Vegas, Vera Cruz, Mexico, resembled that of the Tufted Titmouse, the syllables being like *peto;* and another ornithologist (Price) has described its song as a "liquid *quirt, quirt, quirt,* in a descending scale."

CAPE MAY WARBLER

Dendroica tigrina (*Gmelin*)

A. O. U. Number 650 See Color Plate 95

General Description.— Length, 5 inches. Upper parts, olive-green with dark streaks; under parts, yellow with black streaks. Bill, shorter than head, tapering gradually to a very acute point; wings, long and pointed; tail, notched.

Color.— ADULT MALE: Crown, black, sometimes (especially in midsummer) uniformly so, usually with the feathers, at least those of the back of head, margined with olive (sometimes with rusty); sometimes a spot of rusty on center of crown; back, shoulders, lesser wing-coverts, and upper rump, olive-green, the feathers with a central spot of black; lower rump varying from yellowish olive-green to clear canary-yellow; upper tail-coverts, blackish, broadly margined with olive-green; middle wing-coverts, white or pale yellow, only their extreme base dusky; rest of wings, dusky, the greater coverts edged with white, pale yellow, pale gray, or pale olive, the feathers narrowly edged with light olive-green, these edgings broader and paler on inner wing-feathers; tail, dusky with olive-green or grayish edgings, the three outermost feathers with a large patch of white near the tip on inner web, decreasing rapidly in size from the first to the third; stripe over eye, rufous-chestnut, at least in front (the rear part, sometimes yellow); lores and streak behind eye, blackish; *below eye and sides of head, plain cinnamon-rufous;* sides of neck and under parts, yellow, becoming much paler (sometimes white) on flanks, lower abdomen, and under tail-coverts; chest and sides, streaked with black, the throat also sometimes streaked, and often tinged with cinnamon; bill, black; iris, brown; legs and feet, dusky brownish. ADULT FEMALE: Above, olive, becoming more yellowish on lower rump, where the feathers are sometimes bright olive-yellow with darker center streaks, the crown streaked or spotted with black; wings, dusky with light olive edgings, the middle coverts, tipped or margined terminally with white, the greater coverts sometimes edged with pale grayish; tail, as in adult male; a rather indistinct streak of dull yellowish over eye; under parts, dull whitish, usually tinged with yellow, especially on breast, chest, and sides of neck, the chest and sides streaked

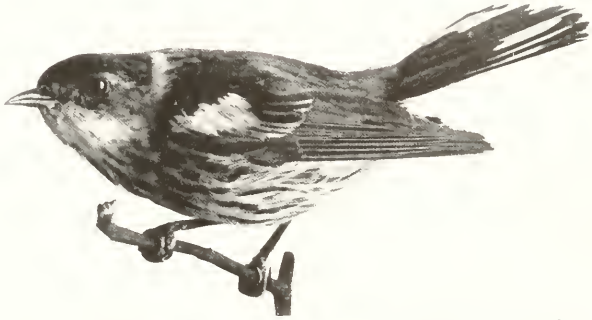
with dusky-grayish or blackish; bill, etc., as in adult male.

Nest and Eggs.— NEST: Usually in low evergreen trees, near ground, in open fields, or cut-over clearings; rather loosely constructed of small twigs, grasses, and leaf stems, fastened with spider webs, and lined with horse-hair; the brim accurately turned into an almost perfect circle. EGGS: Generally 4, dull buffy or grayish-white spotted chiefly around large end with sepia, chestnut, and lilac-gray.

Distribution.— Eastern North America; breeds from southern Mackenzie, northern Ontario, New Brunswick, and Nova Scotia, south to Manitoba, northern Maine, and New Hampshire, and in Jamaica; winters in the Bahamas and the West Indies to Tobago; accidental in Yucatan.

A male Warbler, captured by George Ord in 1809 at Cape May, N. J., was described by Alexander Wilson and named by him the Cape May Warbler. Not till 1825 was a female taken, and this by Charles L. Bonaparte at Bordentown, N. J. This tan-eared Warbler has ever since been eagerly sought, joyously welcomed, and enthusiastically praised. Many of the greatest bird students are not at all familiar with this bird, while some casual observers have had most rare and excellent views of this unusual *dendroica* or tree-dweller. And yet it is said that the nervousness characteristic of most Warblers, though its tree-top habits are those of *dendroica*, The Cape May is also peculiar in its disposition to stop in the spring migration to feed in a small clump of trees and to remain there for three to six days at a time, before going on to its Canadian breeding home. On its arrival there it gives voice to a fine, penetrating, and sweet song, not very different from the *wee-see, wee-see, wee-see* of the Black and White Warbler.

About 1905 Cape May Warblers became more common in western New York, and in



Courtesy of Am. Mus. Nat. Hist.

CAPE MAY WARBLER (nat. size)

Eagerly sought, joyously welcomed, and enthusiastically praised

in the central West as far as the Mississippi it has sometimes been quite common. It may be that the Atlantic coast birds are the scattered individuals far east of the main body of northern migrating Cape May Warblers. Even if this is so, it is also quite certain that there are by no means as many existing individuals of this species as there are of most of the well-known Warblers. A dozen birds together would make them common. Dr. Chapman saw them one spring in Florida on their way north, and in that narrow peninsula through which all of this species migrates, he could very well say that they were common.

The Cape May is a quiet bird, not exhibiting the spring migration of 1916 they were more numerous than ever in the area around the lower Hudson. Either there is a shifting of the birds from western to eastern routes, or else the actual number of individuals is being largely increased. At this rate of increase, the extraordinary excitement over their presence will be reduced in a few years to the normal interest that all Warblers demand from the bird student. On the other hand, of course, they may in succeeding years become as rare as ever.

The Cape May has been found in the company of the Tennessee Warbler indulging in the bad habit of the latter of puncturing grapes and sucking the juice.

YELLOW WARBLER

Dendroica æstiva æstiva (*Gmelin*)

A. O. U. Number 652 See Color Plate 95

Other Names.— Summer Warbler; Yellow Titmouse; Summer Yellowbird; Yellowbird; Yellow Poll; Blue-eyed Yellow Warbler; Golden Warbler; Wild Canary (incorrect).

General Description.— Length, 4¾ inches. Fore and under parts, yellow; upper parts, yellowish olive-green; under parts, streaked with chestnut. Bill, shorter than head, slender, tapering gradually to the tip; wings, moderately long and pointed; tail, slightly rounded.

Color.— ADULT MALE: *General color above, yellowish olive-green*, the crown more yellowish, usually clear yellow on forehead and on the forward portion of crown, often tinged with orange-tawny; upper tail-coverts edged with yellow; back, sometimes streaked with chestnut; wings and tail, dusky, the middle wing-coverts broadly tipped with yellow, the greater wing-coverts and inner wing-feathers broadly edged with the same; primaries, more narrowly edged with yellowish olive-green; inner webs of tail-feathers yellow, tipped with dusky; sides of head and under parts, clear rich yellow, *the chest, sides, and flanks, streaked with chestnut*; bill, blackish; iris, brown; legs and feet, light brownish. ADULT FEMALE: Above, plain yellowish olive-green (usually darker than in adult male), the crown concolor with the back, or at least not distinctly more yellowish; wings and tail, as in adult male, but tips of middle wing-coverts and broad edgings of greater coverts and secondaries less purely yellow, usually yellowish olive-green; under parts, paler and duller yellow than in adult male, usually without streaks, but sometimes with a few, usually indistinct, chestnut streaks on chest and sides.

Nest and Eggs.— NEST: Generally located in hedges and small saplings, within 10 feet of the ground, and strongly fastened in forks; constructed very neatly of grayish colored plant fibers and slender pliable strips of bark and lined with down and feathers; in some cases built entirely of cat-tail down forming an exquisitely soft receptacle for eggs and young. EGGS: 2 to 6, usually 4, with a greenish white ground spotted and splashed around large end with shades of brown, lilac-gray, and some black.

Distribution.— North and South America; breeds in North America east of Alaska and Pacific slope from tree limit south to Nevada, northern New Mexico, southern Missouri, and northern South Carolina; winters from Yucatan to Guiana, Brazil, and Peru.

Photo by H. T. Middleton

MOTHER YELLOW WARBLER

Feeding her one-day-old babes

The Yellow Warbler seems to be one of the few birds, and represents perhaps the only species, which resent and often defeat the Cowbird's parasitic practice of laying its eggs in the nests of other birds and of unloading upon them its parental responsibilities. This the bird does by building a flooring over its eggs among which a Cowbird has deposited one of her own. That the bird does this deliberately, and with the definite purpose of avoiding the hatching and rearing of the ugly and voracious foundling, is shown by the fact that the intended victim of the Cowbird frequently repeats the floor-building operation twice or even three times, to forestall as many of the parasite's attempts to make it a foster parent. Why the Yellow Warbler should be apparently capable of this discernment, and should resent and defeat the intended imposition, while other Warblers, not to mention various Vireos and Sparrows, evidently not only make no effort to get rid of the egg, but feed the young Cowbird as solicitously as they feed their own young, is one of Nature's riddles of which there appears to be no solution.

For many other reasons besides this eminently practical one, the Yellow Warbler makes a strong appeal to our affections and respect. In

Courtesy of the New York State Museum

PINE WARBLER *Dendroica vigorsi* (Audubon)
MALE FEMALE

CAPE MAY WARBLER *Dendroica tigrina* (Gmelin)
MALE FEMALE

PRAIRIE WARBLER
Dendroica discolor (Vieillot)
MALE FEMALE

YELLOW WARBLER
Dendroica aestiva aestiva (Gmelin)
MALE FEMALE

PALM WARBLER *Dendroica palmarum palmarum* (Gmelin)

YELLOW PALM WARBLER *Dendroica palmarum hypochrysea* Ridgway

All ½ nat. size

its generally rich yellow plumage, set off by a few contrasting colors, it is an exceedingly beautiful little creature, a veritable sunbeam in the masses of dark green foliage where it moves rather slowly for a Warbler, but always with a certain distinctive ease and grace. The syllables of its song, a thin but sweet whistle, repeated at short intervals, suggest the words, *sweet, sweet, sweet, sweeter, sweeter*, or again, *wee-chee, wee-chee, chee, chee*, with sometimes a *chur* or a *wee-i-u* included, and accompany a cheerful and unflagging industry which all may behold, because of the bird's fondness for fruit and shade trees about human habitations. It is also frequently found in willow trees near the water, and in other comparatively open growths, but rarely in dense forests. The bird's conspicuous coloration and its very wide distribution make it one of the best known members of its family so many of which are elusive and difficult to identify. GEORGE GLADDEN.

Regional varieties of the Yellow Warbler are: the Sonora Yellow Warbler (*Dendroica æstiva sonorana*), found in the southwestern part of North America from western Texas westward and south through Mexico to Guatemala and Nicaragua; the Alaska Yellow Warbler (*Dendroica æstiva rubiginosa*), breeding in Alaska and south to Vancouver Island and wintering in Mexico and Central America; and the California, or Brewster's, Yellow Warbler (*Dendroica æstiva brewsteri*), breeding west of the Sierra Nevada from Washington to southern California. The winter home of the California Yellow Warbler is unknown.

BLACK-THROATED BLUE WARBLER

Dendroica cærulescens cærulescens (*Gmelin*)

A. O. U. Number 654. See Color Plate 94

Other Names.— Blue Flycatcher; Black-throat.

General Description.— Length, 5 inches. MALE: Upper parts, black and blue; under parts, black and white. FEMALE: Upper parts, olive; under parts, olive-yellowish. Bill, shorter than head, slender, tapering gradually to the tip; wings, moderately long and pointed; tail, even.

Color.— ADULT MALE: Above, plain dull grayish indigo-blue, the back sometimes spotted or clouded with black; wings, except lesser coverts, black, the middle coverts broadly margined, the greater coverts broadly edged, the wing-feathers narrowly edged, with dull grayish indigo-blue, the inner feathers chiefly of the latter color; *wing bars absent; primaries (except outermost) extensively white basally, forming a conspicuous patch;* all the wing-feathers with inner webs extensively white basally and edged with white; tail-feathers black, narrowly edged with dull indigo-blue, the three outermost with a large patch of white on inner webs near the tips; head (except forehead, crown, and back), chin, throat, sides of chest, sides, and flanks, uniform deep black, that along sides and flanks somewhat broken by white streaking; rest of under parts and under wing-coverts, white; bill, black; iris, brown; legs and feet, dusky brown. ADULT FEMALE: Above, plain olive, relieved by a *white or whitish spot at base of longer primaries;* tail, darker and more grayish-olive, edged with light greenish-gray, the inner web of outermost feather sometimes with an indistinct paler, rarely whitish, spot near the tip; a whitish streak on upper and lower eyelids, the former continued backward for a distance over ears; under parts, including cheeks, pale, dull olive-yellowish, shaded with olive laterally; bill, blackish; iris, brown; legs and feet, dusky horn color. YOUNG MALE IN FIRST FALL AND WINTER: Similar to adult male but white of under parts tinged with yellowish, bluish-gray of upper parts tinged with olive-green, and black feathers of throat, etc., margined with white.

Nest and Eggs.— NEST: In small bushes, seldom higher than 2 feet, close to abandoned wood-roads; very neat, thick-walled structures of weed bark, grasses, twigs, and rootlets, lined with fine brown rootlets and horse-hair and always decorated exteriorly with corky bits of wood and woolly parts of cocoons. EGGS: Usually 4, pale buffy-white or greenish-white, rather thickly blotched with varying shades of pinkish and reddish-brown.

Distribution.— Eastern North America; breeding from northeastern Connecticut, mountains of Pennsylvania, northern Ontario and southern Michigan, northward to Labrador and shores of Hudson Bay; westward, during migration, to base of Rocky Mountains, in Colorado and New Mexico, accidentally to California; winters southward to West Indies and northern South America.

Some of the so-called wood Warblers are "woodsy" only by virtue of relationship, but the Black-throated Blue Warbler is one both by structure and by habit. It is, moreover, a specialized woodland bird, resorting to an especial type of "the woods." Its typical haunts are the densely shaded second-growth on the sides of wooded hills, either well to the north, or else to

the corresponding faunal altitude. To suit its fastidious taste there should be rather dense undergrowth, with more or less fallen branches, and more particularly where mountain laurel luxuriates. It might well have been named the "Laurel Warbler." In such places one may note a sweet, simple little song, which in one way

Photo by H. K. Job

NEST OF BLACK-THROATED BLUE WARBLER

In a low fork of the little bush or sapling, a neat little cup will be discovered

reminds one of the Prairie Warbler, in another of the Black-throated Green. Sometimes it comes from up in the trees, but more often from the undergrowth. Here, like most of its tribe, the bird gleans the foliage for insect life, in typical Warbler fashion.

The male is a brilliant distinctive fellow, but the female is apt to prove a puzzle. She is hard to discover, and, even when found, is a nondescript demure greenish bird, hard to name, unless one catches a glimpse of the small white patch on the lower middle part of wing. All she has to say, at the most, is an incisive lisping *tsip*.

The region where I became well acquainted with this retiring, modest little sprite was the wooded hills of northwestern Connecticut, perhaps its most southern summer stronghold, except down the ridge of the Alleghenies. Up in the mountain forests of the town of Salisbury, in June and early July, one may almost constantly hear its song. Here, and all through Litchfield County, in similar situations, it nests in low bushy sprouts, usually within a foot or two of the ground, most frequently in mountain laurel. When one knows just where to look, it is not so very hard to locate nests, by persistent beating, tapping the small laurels with a long switch. In the course of time, the little greenish bird is likely to dart forth, with trembling wings, to limp and flutter over the carpet of dead leaves. In a low fork of the little bush or sapling, a neat little cup will be discovered, wonderfully chaste and well-woven, in the deep hollow of which lie the four delicately spotted white eggs. Such a Warbler's nest seems like a locket or a tiny casket of jewels. Its discovery is rich reward for prolonged search. Finding nests of Warblers is a specialized form of "the sport of bird study." It might be called the chess of woodcraft, a test of agility of mind and eye, combined with the very limit of patience. None but a real bird-lover can practice it with any marked success.

HERBERT K. JOB.

Cairns's Warbler (*Dendroica cærulescens cairnsi*) is a variant of the Black-throated Blue Warbler. It breeds in the Alleghenies from Maryland to Georgia and winters in the West Indies. Both the male and female are darker than their cousins.

MYRTLE WARBLER

Dendroica coronata (*Linnæus*)

A. O. U. Number 655 See Color Plate 94

Other Names.— Myrtle Bird; Yellow-rump; Yellow-rumped Warbler; Golden-crowned Flycatcher; Golden-crowned Warbler; Yellow-crowned Warbler.

General Description.— Length, 5½ inches. SUMMER PLUMAGE: Upper parts, bluish-gray, streaked with black; under parts, white, black, and yellow. WINTER PLUMAGE: Upper parts, grayish-brown; under parts, brownish-white with black streaks. Bill, shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, nearly even.

Color.— ADULT MALE IN SPRING AND SUMMER: Above, bluish slate-gray, streaked with black, the streaks broadest on back and shoulders; *crown with a large, partly concealed, elongated patch of bright lemon-yellow, the lower rump with a triangular patch of paler yellow*; wings, black with gray edgings, the middle and greater coverts rather broadly tipped with white, producing two distinct bands; upper tail-coverts, black, margined with slate-gray; tail, black with gray edgings, the three outermost feathers with a large patch of white on inner web near the tip, decreasing in size from the outermost to the third; a streak over eye and a narrow spot on each eyelid, white, that on upper eyelid sometimes extended backward, sometimes confluent with spot over eye; sides of head, uniform black; cheeks, chin, and throat, white, the lower portion of the last sometimes partly black; chest spotted or clouded with black, this color sometimes nearly uniform; a large patch of light lemon or canary yellow on each side of breast; center line of breast, together with abdomen and under tail-coverts, white; between the yellow lateral patches and the white area of the *breast an elongated patch of black, confluent with throat area, and extending backward to the flanks*, where broken into broad streaks; bill, black; iris, brown; legs and feet, dark brown. ADULT MALE IN AUTUMN AND WINTER: Very different from the summer plumage; above, grayish-brown, with black streaks concealed, except on back and shoulders, where much less conspicuous than in summer plumage; yellow crown-patch concealed by brown tips to the feathers; sides of head, brown, like crown, varied by the same white markings as in summer plumage, but these less distinct; chin, throat, and chest, brownish-white, the last streaked with black; lateral yellow breast patches, less distinct than in summer, usually tinged with brownish and flecked with dusky; black side breast areas broken by broad white margins to feathers; wings and tail, as in summer but white bands across former brownish. ADULT FEMALE IN SPRING AND SUMMER: Similar to the summer male, but smaller and duller in color; the upper parts tinged (sometimes strongly) with brown or dusky brownish-gray, instead of black; less of black on chest and sides of breast, and yellow lateral breast patches smaller and paler yellow. ADULT FEMALE IN AUTUMN AND WINTER: Similar to the winter male, but smaller; upper parts more decidedly brown, with streaks obsolete, except on back; yellow crown-patch more restricted (sometimes nearly obsolete); wing-bands, eyelids, etc., pale brown; under parts, pale buffy-brown to the front and on the sides, the median portion of breast, abdomen, and under tail-coverts, dull yellowish-white; yellow patches on sides of breast, indistinct, sometimes obsolete.

Nest and Eggs.— NEST: Placed usually in a coniferous tree but a few feet up; bulky and carelessly built of small spruce and hemlock twigs, vegetable fibers, old leaves and lined with hair, small roots and some feathers. EGGS: 3 to 5, dull white or creamy speckled and blotched with shades of chestnut, brown and lilac-gray, often in wreath around larger end.

Distribution.— North America in general, chiefly east and north of Rocky Mountains; breeding from mountains of western Massachusetts, northeastern New York, northern Michigan, Manitoba, etc., to limit of tree growth, wintering from the United States (except extreme northern portions) southward to West Indies, through Mexico and Central America to Panama; on Pacific coast from central Oregon to southern California; accidental in Greenland and eastern Siberia.

The color contrasts in the plumage of the Myrtle Warbler, its very wide distribution, and the fact that it is often a winter resident in New York and New England, make it one of the best-known members of its species. The patch of bright yellow which is very conspicuous just above the bird's tail serves as a positive identification mark, and gives the bird its common alternative name of Yellow-rumped Warbler. Again, it is the only Warbler with a white throat, excepting the Chestnut-sided, which plainly shows any yellow in its plumage. Furthermore, it moves with more deliberation than is characteristic of many members of this essentially restless and somewhat nervous family; while its habit of feeding much in shrubbery and hedges brings it frequently within easy observation range. Finally its stay in its northern range is much more prolonged than is that of most other Warblers, for it arrives in the latitude of New York city about the last week of April and remains until about the 20th of November. During that month, the Myrtle is of very common occurrence along the southern shore of Long Island, where it feeds in the stunted and then leafless brush, cheerfully unmindful of its bleak surroundings. It takes its name from its manifest fondness for myrtle-berries (or "bayberries," as they are also called), and is very likely to be found wherever that fruit is plentiful.

The Myrtle Warbler has two common call notes: one which suggests the syllable *sweet*, uttered with the inflection of inquiry, and most commonly heard in the autumn; the other, a shorter and less musical note of a sibilant quality. Its most commonly heard summer song has been called a "sleigh-bell trill," and is a tinkling little warble usually involving the reiteration four or five times of the same note, which is followed by two or three a litle higher or lower.

AUDUBON'S WARBLER

Dendroica auduboni auduboni *(J. K. Townsend)*

A. O. U. Number 656

Other Name.—Western Yellow-rumped Warbler.

General Description.—Length, 5½ inches. Upper parts, gray, streaked with black; under parts, black and white; yellow patches above and below. Bill, shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, nearly even.

Color.—Adult Male in Spring and Summer: Above, bluish slate-gray, streaked, except sometimes on upper sides and back of head, and hindneck, with black, the streaks broadest on back, shoulders, and upper tail-coverts, where partaking more of the character of wedge-shaped central spots; *crown with a large central elongated patch of rich lemon- or gamboge-yellow; lower rump with a triangular patch of lighter lemon-yellow;* wings, black, the middle and greater coverts very broadly tipped with white, the latter also broadly edged with white, forming a large and conspicuous wing-patch, the wing-feathers narrowly edged with gray (broader on inner feathers); tail, black with bluish-gray edgings (becoming white on outermost feather); inner webs of four or five outermost feathers with a large patch of white near the tip, decreasing in size inwardly; sides of head, bluish slate-gray, like general color of upper parts, darkening (sometimes into nearly black) below and in front of eyes, and relieved by a white spot on upper eyelid and a larger one on lower eyelid; chin and throat, bright lemon-yellow; chest, black, or mixed black and gray; center portion of breast, together with abdomen and under tail-coverts, white; sides of breast, next to white space, black, forming a large patch, confluent forward with the black or partly black throat area, and continued backward over sides and flanks in broad streaks; a large patch of yellow on each side of breast outside the black area; bill, black; iris, brown; legs and feet, dark brown or brownish-black. Adult Male in Autumn or Winter: Much duller and browner than the summer male, and showing much less of black, that of chest and sides mostly overlaid by broad tips or margins to feathers of brownish-white; gray of upper parts much obscured by a wash of brown, and white wing-markings tinged with brown. Adult Female in Spring and Summer: Essentially like the summer male in coloration, but much duller and with less of black on under parts; gray of upper parts, duller, usually tinged with brown; yellow crown-patch smaller and broken by brown or brownish gray tips to feathers; middle and greater wing-coverts, more narrowly tipped with duller white, the latter not edged with white; yellow of throat paler, usually passing into white on chin; chest and sides of breast, white or pale grayish, spotted or clouded with black; lateral breast patches smaller and paler yellow. Adult Female in Autumn and Winter: Similar to the winter male, but smaller and still duller in color, the back without sharply defined streaks of black, yellow of throat and lateral pectoral patches paler and more restricted, and chest and sides of breast without sharply defined partly concealed black spots. Young in First Plumage: Above thickly streaked with dusky on a pale brownish-gray ground color, the latter here and there inclining to grayish-white, the streaks broader and more blackish on back and shoulders; lower rump, grayish-white, narrowly streaked with dusky; under parts, grayish-white, everywhere streaked with dusky.

Nest and Eggs.—Nest: Usually in coniferous trees, on outer limbs from 3 to 30 feet up; constructed of strips of bark, sage brush twigs, or pine needles, lined with rootlets, hair, and feathers. Eggs: Generally 4, rarely 5, olive-whitish or pale greenish-white, thinly spotted with black, brown, and lilac-gray.

Distribution.—Western North America, north to British Columbia, east to western border of the Great Plains; breeding southward (in coniferous woods on high mountains) to southern California, northern Arizona, and New Mexico, eastward to western Nebraska, Wyoming and Colorado; wintering from western United States (in lower valleys) southward over whole of Mexico and Lower California to highlands of Guatemala, eastward to western Texas and western Kansas; accidental in Massachusetts and Pennsylvania.

Because of its resemblance to the Myrtle Warbler, especially as to the arrangement of the yellow patches in its plumage, Audubon's Warbler is often called the Western Yellow-rumped Warbler, but a careful observer is not likely to overlook the broad white wing-patch which is a sure mark of identification of the Audubon and distinguishes it from the Myrtle, or Yellow-rumped, Warbler. Futhermore, the breeding ranges of the two birds are widely separated, and it is only during their fall migration that they are found frequently in the same territory.

Gray plumage is not common among the birds of the Northwest, and for that reason the little Audubon gets a good deal of attention in that region. Moreover he is one of the first of the small birds to arrive at his breeding grounds, where to some extent he is even a winter resident — in Washington, for example.

Mr. Finley questions the statement of some observers as to the nest building being done solely by the female Audubon Warbler. He says: "My experience with this bird is that it is no different than the other Warblers. In some cases, I find the female takes the more important

Drawing by R. Bruce Horsfall

AUDUBON'S WARBLER (nat size)

A persistent and skillful flycatcher

part in the home building and the care of the young; in other cases, the pair work side by side. The individualities of birds of the same species are often very different. My experience with the Audubon Warbler is that it does not nest in the same tree year after year, although there may be specific instances of this kind. I have noted this fact in some birds, and to me it indicates that the same birds, or at least one of the same pair, have returned. The Audubon Warbler is a frequent resident of our Douglas firs, and through western Oregon and Washington nests much lower than 11,000 feet." (MS.)

They are persistent and skillful flycatchers, and their sallies and aërial zigzagging are very cleverly executed. The call-note is a *tchip* similar to that of the Myrtle Warbler. The song, Bowles says, is "a short though pleasing little warble, surprisingly feeble for so large a bird, and in no way equal to that of its smaller relative, the Yellow Warbler."

In Arizona and northern Mexico is found a variant form of Audubon's Warbler. It is larger and much darker. Its foreneck, chest, and the entire breast except the lower central portion and the yellow patches on the side are uniform black and give to the bird its name of Black-fronted Warbler (*Dendroica auduboni nigrifrons*).

MAGNOLIA WARBLER

Dendroica magnolia (*Wilson*)

A. O. U. Number 657 See Color Plate 97

Other Names.— Black and Yellow Warbler; Spotted Warbler; Blue-headed Yellow-rumped Warbler.

General Description.— Length, 4¾ inches. Upper parts, black with yellow and white patches; under parts, yellow with black streaks. Bill, shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, even or nearly so.

Color.—ADULT MALE: *Crown and hindneck, uni-*

form bluish slate-gray, margined laterally by a white streak beginning on upper eyelid and extending over ear region; a white spot on lower eyelid; forehead, lores, space below eyes, *sides of head, sides of neck, back, and shoulders, uniform deep black*, the last sometimes margined with olive-grayish; rump, clear lemon-yellow, the upper portion streaked with black and sometimes partly olive-greenish; upper tail-coverts, black; tail, black, the outer webs of feathers edged with gray, their inner webs (except middle pair) crossed in middle portion by a broad band of white, about one-half inch wide; wings, black, the middle and *greater coverts broadly margined and tipped with white, forming a large and conspicuous patch*, the wing quills and primary coverts, narrowly edged with gray; under parts, except under tail-coverts, rich lemon-yellow, the chest, sides, and flanks, very broadly streaked with black — these black markings sometimes confluent on the chest; under tail-coverts and under wing-coverts, white; bill, black; iris, brown; legs and feet, dusky-brown. ADULT FEMALE: Much duller in color than the male; gray of crown and hindneck duller, passing into dull olive-greenish on back, where usually blotched or spotted with black, rarely mostly black; lower rump crossed by a band of olive-yellow; upper tail-coverts, black centrally margined with slate-gray; tail as in male but black duller; wings, duller black than in male, with less of white on middle and greater coverts; sides of head sometimes as in adult male, usually duller in color, sometimes with olive-grayish replacing black; under parts paler and duller yellow than in male, with chest and sides less heavily marked with black.

Nest and Eggs.— NEST: Generally in a hemlock from 4 to 15 feet up; put together in a slovenly manner and made of twigs, grass, weed stalks, or fine rootlets, but always plentifully lined with horse-hair whenever obtainable (in its absence fine black roots are utilized). EGGS: 4, rarely 5, creamy-white, boldly blotched with shades of chestnut, brown, and a few lilac spots.

Distribution.— Eastern North America, north to Anticosti Island, Magdalen Islands, southern shores of Hudson Bay, and in the interior to the Great Slave Lake district; breeding southward to northern and western Massachusetts, mountains of Pennsylvania, northern Michigan, Manitoba, etc.; west to eastern base of Rocky Mountains, casually to California and British Columbia; southward in migration through more southern United States east of Rocky Mountains; in winter, Bahamas, Cuba, Haiti, and Porto Rico, and through eastern Mexico and Central America to Panama.

"Black and Yellow Warbler," the name formerly applied to the Magnolia Warbler, had the advantage of being colorably descriptive, but the disadvantage of being equally accurate in that respect as applied to no less than three other species of the same group, the Prairie, the Canada, and the Cape May Warblers. Hence the change to the popular specific name, Magnolia, was well-considered.

The species is one of the handsomest of a family famous for the beauty of so many of its members. The contrast between its characteristic colors, black, yellow, and white (the white wing-bars being very plainly marked) makes it conspicuous, despite its small size, rapid movements, and fondness for dense spruce foliage in which a neutral-colored bird might easily be overlooked. The bird is also likely to be found in spring in willow thickets near water, while in autumn it shows a liking for scrub-oak and birch timber, especially on hillsides. In its movements, it is quick and fidgety, and it has a trick of partly spreading its tail, thereby showing the characteristic white-banded feathers.

No two writers agree as to the song of this bird. This difference of opinion would indicate that the Magnolia has a greater variety of notes than any other Warbler. Each observer likens its song to that of another bird, and this Warbler seems to have no song peculiar to itself.

CERULEAN WARBLER

Dendroica cerulea (*Wilson*)

A. O. U. Number 658 See Color Plate 94

Other Names.— Blue Warbler; Azure Warbler.

General Description.— Length, 4¼ inches. Upper parts, grayish-blue and black; under parts, white. Bill, shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, even or nearly so.

Color.—ADULT MALE: *Above, grayish-blue, brighter on crown, where approaching azure;* sides of back part of crown and back of head streaked with black, sometimes suffused into patches; back and shoulders, streaked with black; upper tail-coverts, black margined with grayish-blue; wings and tail, black margined with grayish-blue edgings, the middle and greater coverts, broadly tipped with white, forming two conspicuous bands; the inner web of tail-feathers with a patch of white near the tip, largest on outermost; sides of head, grayish-blue, relieved by a streak of dusky behind eye, this often margined above by a streak of white; cheeks and under parts, white, *the sides and flanks broadly*

streaked with dusky (suffused, especially on sides of breast, with grayish-blue), the chest usually crossed by a narrow band of blackish suffused with grayish-blue, this band often interrupted in the middle, sometimes wanting; bill, black, grayish-blue below; iris, brown; legs and feet, brownish-dusky. ADULT FEMALE: Above, varying from light bluish-gray to grayish olive-green, the crown brighter (grayish glaucous-blue to sage-green), entirely unstreaked; wings and tail as in adult male, but edgings, light greenish or olive-grayish instead of bluish; a whitish or pale yellowish stripe over eye; sides of head, grayish or grayish olive-green, darker along upper margin, somewhat streaked with whitish or pale yellowish toward the front; under parts dull white, usually suffused with pale yellow (sometimes strongly so), especially on sides of neck and across chest.

Nest and Eggs.—NEST: Placed in forks of small branches of deciduous trees, at some distance from trunk, and from twenty to fifty feet up, compactly built of fine grasses and plant fibers securely bound together by spiders' webs and decorated with bits of lichen. EGGS: Usually 3 or 4, white, dull bluish or greenish-white speckled with reddish-brown and lilac chiefly around large end.

Distribution.—Eastern United States, chiefly west of the Alleghenies; breeding northward to eastern Nebraska, Minnesota, Wisconsin, Michigan (as far as Mackinac Island), Ontario, western and central New York, eastward to eastern Maryland and western Virginia, southward to Tennessee, Louisiana, etc.; casually or irregularly northward to Connecticut, Rhode Island, Long Island, and New Jersey; west regularly to edge of the Great Plains, occasionally to Rocky Mountains; in winter south to Cuba and Grand Cayman and through eastern Mexico, Central America, and Western South America to central Peru and Bolivia.

Nothing looks more strange in our northern woods than the azure blue of the sky animated in the personality of a Cerulean Warbler. Strange it is because such dainty blues belong rather to the tropics and even there are rare. Blue it is, strong yet dainty, not vivid, seeming even to be too unreal to be enduring. And animated it is, belying the first impression of unreality by an energetic manner that makes the bird noticeable. If the Warbler has a green or brown background he can be seen, but against the heaven's blue he is lost to the eye. Wait for a damp day and he will come down into the lower limbs of the trees and the observations of him will be much improved.

It is mainly in swampy woodland from the Genesee and Monongahela valleys west to the lower Missouri valley that the Cerulean Warbler is common.

This is another bird that, coming up out of the Southwest in migration, has not been content with a Mississippi valley home, but has pushed on into the Northeast. There is some difference of opinion as to the question of its frequency a century ago in the East, but the observations seem to show that there is a decided increase in its numbers in central New York. The accidental records along the Atlantic coast do not seem to be increased by the gradually approaching northeastern boundary.

The Cerulean is not a very attractive singer but he is persistent. His *zee, zee, zee, ze-ee-ee-eep* becomes to the ordinary listener but a part of the buzz of summer.

CHESTNUT-SIDED WARBLER

Dendroica pensylvanica (*Linnæus*)

A. O. U. Number 659 See Color Plate 96

Other Names.—Golden-crowned Flycatcher; Bloody-side Warbler; Yellow-crowned Warbler; Quebec Warbler.

General Description.—Length, 5 inches. Upper parts, white, grayish, and olive-yellow with black streaks; under parts, white with patches of chestnut. Bill, shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, notched.

Color.—ADULT MALE: *Forehead and crown, olive-yellow*, the former becoming whitish in front, both sometimes flecked with dusky; lores, space below eye, cheeks, stripe behind eye, and hindneck, black, the last two streaked with white, grayish, or yellowish, back of head usually with a central spot of white or yellowish; sides of head, neck, chin, throat, and under parts, white, *relieved by a broad lateral stripe of rich chestnut*, extending from rear of black cheek stripe along the sides, usually to the flanks, but sometimes not beyond sides of breast; back and shoulders, broadly streaked with black on a white, grayish, and olive-yellow ground, the last-mentioned color usually prevailing; rump, usually yellowish olive-green, sometimes grayish, with or without black streaks; upper tail-coverts, black, broadly margined with light gray (sometimes tinged with yellowish olive-green) tail black with narrow olive-grayish edgings, the three outermost

feathers with inner webs extensively white terminally, that on the exterior feather occupying the terminal half, or more; wings, black with yellowish olive-green edgings (becoming grayish on primary coverts), the middle and greater coverts, broadly tipped, the latter also edged, with sulphur-yellow; lesser coverts, margined with gray or olive-gray; bill, blackish; iris, brown; legs and feet, dusky-brown. ADULT FEMALE: Similar to adult male, but duller in color, the forehead and crown, light olive-green rather than olive-yellow, the black areas on sides of head, less deep black often much broken by grayish streaking or mottling, sometimes replaced by grayish, and much more restricted; chestnut of sides averaging less extensive; greater wing-coverts without chestnut-yellow edgings.

Nest and Eggs.— NEST: Usually placed in low bushes or small trees, in or close to clearings or edge of woods; rather loosely woven of coarse grass, strips of bark, and plant down and rather sparsely lined with hair and fine grass. EGGS: Generally 4, rarely 5, varying from white to creamy, speckled with rusty-umber, reddish-brown, and lilac.

Distribution.— Eastern United States and more southern British Provinces; north to Nova Scotia, northern Ontario, and Manitoba; west to edge of the Great Plains, casually to eastern Wyoming; breeding southward to Connecticut, northern New Jersey, Pennsylvania, northern Ohio, central Illinois, Missouri, and eastern Nebraska, and along Allegheny Mountains to western North Carolina (2000 to 4000 feet), northwestern South Carolina, and eastern Tennessee (Roan Mountain, 3500 to 4000 feet); in winter south through eastern Mexico and Central America to Panama; accidental in Greenland.

The Chestnut-sided Warbler is one of the Warblers of intermediate range, neither very northerly nor very southerly. It is a characteristic summer bird of the latitude of southern New England and of the northern Middle States. Scrub pastures and open second-growth woodland are its characteristic haunts. Not only does it wear the color of chestnut, but it is partial to the real article, and wherever, in its range, there is second-growth chestnut, it is likely to be found, flitting through the foliage, ever on the lookout for its insect prey. It is an active bird, yet a gentle one, easy to approach.

Its song, while rather simple, is quite conspicuous in the scrub which it frequents, and on roadside borders of pasture-land. Sometimes, if one should follow up the song, the male will be found perched in the sunshine at the very top of a young tree, or on a dead branch, singing away at a great rate.

Whereas growing scarcity of birds is usually the prevailing plaint, the Chestnut-sided Warbler is a species which must have had notable increase during the past century, for Audubon only met it once in all his indefatigable searches after birds. Now he could readily find it on thousands of farms.

The nest usually has its quota of four or five eggs about the last of May or first of June in southern New England. It is built with rather looser texture than some other Warblers employ, the Redstart, for example. Yet it is quite a neat little structure, placed in a fork of a bush in its favorite pasture haunts, quite low down, usually

Drawing by R. I. Brasher

CHESTNUT-SIDED WARBLER (¾ nat. size)

One of the easiest birds to photograph at the nest

about waist high from the ground. Though fairly well concealed by leaves, it is not generally in so dense a mass of foliage as some. I have found a number of these nests by tapping the bushes with a switch and seeing the owner dart out or hearing the slight rustle of her departure.

The delight of finding a nest is greatly enhanced by the tameness of the little owners. They are among the easiest of birds to photograph at the nest, making little objection to incubating or feeding the young in one's immediate presence. In one case I was focusing the camera on the nest, with head under the cloth, when I saw the image of the mother on the ground glass. She let me focus on her, and then take all the pictures I wanted, her feathers fluffed up in a very gentle and pretty protest.

On another occasion when I was bird-sporting with a motion-picture camera and a boy assistant, seeing that the owners of a nest of this species which I had found were remarkably fearless, I had the boy sit quietly by the nest, holding the young in his hand. In a short time the parents, who had found us gentle and harmless, were using him as a convenient roost and were all over him, on legs, arms, hands, and head. It was a wonderful film of these beautiful birds that I thus secured. HERBERT K. JOB.

Photo by H. K. Job Courtesy of Outing Pub. Co

CHESTNUT-SIDED WARBLER

On its nest, a neat little structure, placed in a fork

BAY-BREASTED WARBLER

Dendroica castanea (*Wilson*)

A. O. U. Number 660 See Color Plate 96

Other Names.— Little Chocolate-breast Titmouse; Bay-breast.

General Description.— Length, 6 inches. Upper parts, buffy-olive, black, and chestnut; under parts, chestnut and buff. Bill, shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, notched.

Color.—ADULT MALE: *Forehead, sides of crown, sides of head, lores, and cheeks, black enclosing a patch of rich chestnut;* sides of neck, plain buff; back and shoulders, gray, usually tinged (sometimes strongly) with buffy-olive and broadly streaked with black; rump, similar but with streaks concealed; upper tail-coverts, gray with center streaks of blackish; tail, grayish-black or dusky with light-gray edgings, the inner webs of two or three outermost tail-feathers with a patch of white, that on exterior feather occupying the terminal third or more; wings, grayish-black or dusky with light olive-gray or olive edgings, the middle and greater coverts broadly tipped with white, forming two conspicuous bands across wing; *throat (sometimes chin also), chest, sides, and flanks, plain light chestnut;* rest of under parts, plain pale buff, the under tail-coverts more decidedly buffy; bill, brownish-black; iris, brown; legs and feet, dusky-brownish. ADULT FEMALE: Essentially similar to the male except in extent of the chestnut, which is often almost entirely absent, and never so strongly marked; whole crown usually distinctly streaked with black on a gray, olive, or olive-green ground, the crown and back of the head usually intermixed with chestnut, sometimes with a considerable patch of that color; chestnut of under parts sometimes wholly absent, but usually the area so colored in the male is indicated, especially across chest and along sides; forehead and sides of head never (?) black.

Nest and Eggs.— NEST: Commonly placed in a coniferous tree from five to twenty feet up; a compact, cup-shaped structure made of rootlets, strips of bark, small twigs, and some dried grass. EGGS: Usually 4, bluish-white, finely speckled around larger end with chestnut.

Distribution.— Eastern United States and British Provinces; north to Hudson Bay and Manitoba; west to edge of the Great Plains; breeding southward to northern Maine, New Hampshire, Vermont, New York, and northern Michigan; in winter southward through eastern Mexico and Central America to Panama and Colombia.

The Bay-breasted Warbler is a bird of the Canadian forests noticeable to civilization mainly in its spring and fall migrations. The migration of the bird is one of the most interesting things yet known about it. Between Canada and its winter home in Colombia and Panama, it restricts itself to areas that lead to the upper northern and northeastern waters of the Mississippi basin.

Following the basin down the Gulf coast, the bird makes the great flight across the Gulf of Mexico and the Caribbean Sea to Panama and the adjacent Colombian shores. The bird thus evades Virginia, Florida and the West Indies on the east, and Mexico on the west. Why this little deep buff-colored bird should evolve such a route is a puzzle. In the United States it has been found nesting in the Maine woods and in the White Mountains.

It is a trifle larger than most of the tree-top Warblers, a trifle duskier, and rather quieter in its habits. It has more of the leisurely manner of the Vireo.

There is much variation in the Bay-breast's song and this, together with its resemblances to the songs of the Blackburnian, the Black-poll, the Black and White, and the Cape May Warblers, makes it difficult to identify.

BLACK-POLL WARBLER

Dendroica striata (*J. R. Forster*)

A. O. U. Number 661 See Color Plate 96

Other Names.— Black-poll; Autumnal Warbler.

General Description.— Length, 5½ inches. MALE: Upper parts, gray streaked with black; under parts, white streaked with black. FEMALE: Upper parts, olive streaked with black; under parts, white and yellow streaked with black. Bill, shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, notched.

Color.— ADULT MALE IN SPRING AND SUMMER: Entire crown, uniform black; hindneck, streaked with black and white, in varying relative proportion; back and shoulders, broadly streaked with black on a gray or pale olive ground; rump and upper tail-coverts similar but less distinctly streaked, often (especially the rump) without streaks; tail, dusky, with light gray edgings, the inner webs of two or three outermost feathers with a patch of white near the tip (largest on the outside one); wings, dusky with light olive edgings (more yellowish-olive on primaries), the middle and greater coverts broadly tipped with white, forming two conspicuous bands; sides of head, white, including lower eyelid, space below eye, and cheeks; sides of neck, streaked with black and white; under parts, white, broadly streaked laterally with black, the black streaks on sides of throat merging into two stripes converging and usually united on chin, *forming a conspicuous V-shaped mark;* under tail-coverts, pure white; bill, dusky; iris, brown; legs and feet, pale yellowish-brown. ADULT MALE IN AUTUMN AND WINTER: Above, dull olive-green passing gradually into dull gray on upper tail-coverts; back and shoulders (sometimes also the crown, rump, or upper tail-coverts), narrowly streaked with black; wings and tail as in summer plumage, but white wing-bands usually tinged with yellow; over the eye a narrow and indistinct streak of pale olive-yellowish, the upper eyelid whitish; ear region and sides of neck, olive or dull olive-greenish, like color of upper parts; cheeks, chin, throat, chest, breast, and sides, pale olive-yellow or straw-yellow, the sides and flanks indistinctly streaked with dusky; abdomen, anal region, and under tail-coverts, white. ADULT FEMALE: Above, varying from olive-green to gray, streaked with blackish, the streaks usually obsolete or nearly so on rump; wings and tail as in adult male, but white wing-bands tinged with yellow (except in specimens having a gray upper surface); under parts, varying from white to pale olive-yellow (with all intermediate conditions — the under tail-coverts always white), streaked laterally with black or dusky, the streaks usually most distinct on sides of throat and breast.

Nest and Eggs.— NEST: Placed in small spruces from three to eight feet up; constructed of small twigs, rootlets, lichens, and grasses and lined with feathers, fine grasses, and down. EGGS: 4 or 5, creamy or grayish-white, speckled and blotched with varying shades of chestnut, lilac, and gray.

Distribution.— North and South America; breeds from the limit of trees in northwestern Alaska, northern Mackenzie, central Keewatin, northern Ungava, and Newfoundland south to central British Columbia, Manitoba, Michigan, northern Maine, and mountains of Vermont and New Hampshire; winters from Guiana and Venezuela to Brazil; migrates through the Bahamas and West Indies; casual in New Mexico, Mexico, Chile, and Ecuador; accidental in Greenland.

The Black-poll Warbler is frequently associated in its breeding range with its nearest relative, the Bay-breast. Like the Bay-breast, the Black-poll has an extraordinary migration range. The areas over which these two kinds of Warblers travel are, however, quite different. Black-poll, nesting in Alaska and northern Canada as far as the northern limit of trees, passes south in migration pretty well over the whole of the United States east of the Missouri River, concentrating its lines in Florida, and goes on from island to island the whole length of the West Indies, over the Span-

BAY-BREASTED WARBLER *Dendroica castanea* (Wilson)

IMMATURE MALE FEMALE

BLACK-POLL WARBLER *Dendroica striata* (J. R. Forster)

IMMATURE MALE FEMALE

CHESTNUT-SIDED WARBLER *Dendroica pensylvanica* (Linnaeus)

IMMATURE MALE FEMALE

All ½ nat. size

ish Main, to the interior of Brazil. Not a Black-poll winters north of South America. This means that if a Brazilian bird nests in Alaska, he has five thousand miles to travel twice a year. At the shortest, from the mouth of the Orinoco to the Adirondacks there are twenty-five hundred miles to travel.

Coming north as it does among the latest of the Warblers, Black-poll is very difficult to see. The trees, already far advanced in foliage, easily hide him; and when the Black-poll remains, as he often does, in the tops, he is well out of sight. His song resembles the Black and White Warbler's, but the notes are separated, not in pairs. The hesitating, sibilant notes have crescendo and diminuendo effects that make it possible to distinguish the song from its near relatives. Once learned, the song in the leafy trees is a clue to his presence, and the search may bring him to view.

The Black-poll delays into June before leaving the areas just south of its breeding range, while the more northern breeding birds are on their way to Alaska and the lower Mackenzie. There are a few that nest in the northern tier of States west to Montana, but most often, possibly always, in evergreens, the preference being for short thick clumps of spruces.

Again in the fall the Black-poll seems loath to leave, waiting behind the other Warblers. He does not leave the northern States before October. His Vireo-like movements often make him more noticeable than in the spring. At last he does decide to go, and he is off for the Amazonian forests.

L. Nelson Nichols.

Photograph by R. W. Shufeldt

BLACK-POLL WARBLER

Adult male in spring plumage, from life

BLACKBURNIAN WARBLER

Dendroica fusca (*Müller*)

A. O. U. Number 662 See Color Plate 97

Other Names.—Hemlock Warbler; Torch-bird; Fire-brand; Orange-throated Warbler.

General Description.—Length, 5½ inches. Upper parts, black or blackish with spots of yellow and white; under parts, orange and yellow. Bill, shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, notched.

Color.—Adult Male: *Crown and hindneck, black, relieved by an oval patch of orange on middle of crown; a broad stripe of orange over eye confluent behind with a large patch of the same on side of neck;* a spot of rather paler orange-yellow immediately beneath eye, including lower eyelid; loral streak and sides of head, black, the two connected by a narrow streak at the corner of the mouth; cheeks, chin, throat, and chest, rich orange; remaining under parts, pale yellowish (more decidedly yellowish on breast), the under tail-coverts, white; sides and flanks streaked with black, these black streaks commencing at lower rear extremity of ear region; general color of upper parts, black, the back streaked with whitish, especially the exterior row of shoulder-feathers, which have most of the outer web whitish, forming, when feathers are properly arranged, two stripes along each side of back; feathers of rump and upper tail-coverts edged with whitish; two to three outermost tail-feathers white, with black shafts and with a terminal wedge-shaped mark of black; fourth tail-feather also with much

white on inner web near the tip, and fifth sometimes with a white edging to the inner web; exposed portion of middle wing-coverts and innermost greater coverts, white, forming a conspicuous patch on wing, the outermost greater coverts, black, broadly tipped with white and narrowly edged with olive-grayish, these edgings broader and paler (sometimes white) on innermost; bill, brownish-black; iris, brown; legs and feet, dusky-brown. ADULT FEMALE: Above, grayish-olive; crown, streaked with black with a central spot of pale yellow; back, broadly streaked with black, the outside row of shoulder-feathers with outer webs mostly very pale buffy-grayish or grayish-buffy, forming two broad stripes when feathers are properly arranged; upper tail-coverts, black, margined with brownish-gray; wings and tail, as in adult male but general color much duller blackish, the lateral tail-feathers less extensively white and the white on greater wing-coverts usually not joining that on middle coverts, the white thus usually forming two broad bars instead of a single large patch; broad stripe over eye joining a patch on side of neck, pale yellow; sides of head and lores, grayish-olive; chin, throat, and chest, deep chrome-yellow; rest of under parts, dull yellowish-white, more strongly tinged with yellowish on breast, the under tail-coverts, more nearly white, the longest sometimes with a narrow center streak of dusky; sides and flanks streaked with dusky; bill, iris, etc., as in adult male.

Nest and Eggs.— NEST: An elegant, compact structure of cat-tail down, hemlock twigs, fine grasses, rootlets, and strips of bark and lined with horse-hair and fine lichens; placed almost always in a conifer, spruce or hemlock preferred, usually at great height, in one instance 84 feet. EGGS: Usually 4, grayish or bluish-white, blotched and speckled with cinnamon and olive-brown.

Distribution.— Eastern North America and northern South America; breeds from Manitoba, southern Keewatin, central Ontario, Quebec, and Cape Breton Island to central Minnesota, Wisconsin, northern Michigan, Massachusetts, and Connecticut, and in the Alleghenies from Pennsylvania to Georgia and South Carolina; winters from Colombia to central Peru and less commonly north to Yucatan; in migration to Nebraska, Texas, and Kansas, straggling to Utah, New Mexico, and the Bahamas.

"Torch-bird," Mrs. Mabel Osgood Wright says, would be a good name for this almost dazzlingly brilliant fellow, and Mr. Parkhurst thinks he "might properly be named the conflagration warbler," and continues: "Called, prosily enough, from its discoverer, Blackburn, the name is saved to poetry by the significant play upon words; for while a part of the plumage is black as coal, the crown, sides of face, throat and breast are of a most vivid flame color — a most astonishing combination of orange, black and white, and arranged in such abrupt juxtaposition that, in seeing it for the first time, one will unquestionably pronounce it the most glorious of all the Warblers. Its own color ought to suffice to keep it comfortable in the Arctic Zone." (*The Birds' Calendar*). "The orange-throated warbler would seem to be his right name, his characteristic cognomen," says Mr. Burroughs; "but no, he is doomed to wear the name of some discoverer, perhaps the first who robbed his nest or rifled him of his mate — Blackburn; hence Blackburnian Warbler. The *burn* seems appropriate enough, for in these dark evergreens his throat and breast show like flame."

These are characteristic expressions of the wonder and delight which are inspired by the appearance of this gaudy little sprite of the deep forest. For it is in such growths, and especially in the big conifers, that the bird is most likely to be seen, and frequently in the company of the Northern Parula, Canada, and Black-throated Blue Warblers, all beautiful little creatures, but none so positively gay in apparel as the Blackburnian. Though not really timid, the bird's characteristic movements are quick and nervous, like those of most of its kind. Like theirs, too, its song is thin and essentially sibilant in its quality. *Wee, see, see, see, zi, zi, zi,* Mr. Hoffmann renders one common version of it, while to Mr. Torrey another phrase sounded like *zillup, zillup, zillup.*

YELLOW-THROATED WARBLER

Dendroica dominica dominica (*Linnæus*)

A. O. U. Number 663

Other Names.— Yellow-throated Creeper; Dominican Yellow-throat.

General Description.— Length, 5¼ inches. Upper parts, gray; under parts, yellow and white. Bill, shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, even or nearly even.

Color.—ADULT MALE: Forehead (sometimes crown also, especially side portions), lores, below eyes, and greater part of sides of head, black; back of head, hindneck, back, shoulders, rump, and upper tail-coverts,

plain slate-gray, the crown also sometimes gray (except on the sides) streaked with black; wings and tail, black with slate-gray edgings, the middle and greater wing-coverts, broadly tipped with white, forming two conspicuous bands across wing; two to three outermost tail-feathers with inner web extensively white at the end, this on side feather occupying approximately the end half; over the eye a broad white stripe usually becoming yellow (over lores); a crescentic spot below eye, and patch on side of neck (invading center rear portion of sides of head), white; *throat and chest, lemon-yellow*, the chin, usually white; rest of under parts, white, broadly streaked on the sides with black, the broad black streaks on sides of chest joining with a narrow stripe connecting them with the triangular black patch on side of head; bill, black; iris, brown; legs and feet, dusky horn color. ADULT FEMALE: Similar to the adult male and often not distinguishable, but usually with less black on forehead, which is more often gray, streaked with black centrally, and yellow of throat and chest averaging slightly paler.

Nest and Eggs.— NEST: Placed on pine limb, fastened by insect webbing, generally rather high up, or hidden in tufts of Spanish moss; constructed of twiglets, strips of bark, and leaf stems, fastened with moss or cobwebs, and lined with soft vegetable down. EGGS: 3 or 4, dull greenish or grayish-white, spotting of brown and lilac-gray confined to large end, sometimes forming wreaths.

Distribution.—Atlantic coast district of United States; north to lower Maryland and eastern shore of Virginia, casually to New York (Long Island), Connecticut, and Massachusetts; breeding southward to Florida; in winter to southern Florida, Bahamas, Cuba, Grand Cayman, Jamaica, Haiti, and Porto Rico, and occasionally north to South Carolina.

The Yellow-throated and Sycamore Warblers are geographical variations of the same species of Warbler. Both are yellow-throated, both are southern, both haunt the tops of large evergreens, and both have clear ringing songs. From Virginia south to Florida the bird is known as the Yellow-throated Warbler. From Ohio and Missouri south to the Gulf he is called the Sycamore Warbler (*Dendroica dominica albilora*).

He is not a very common bird anywhere, but the clear song of this Dominican Yellow-throat as it rings out from the tops of the tall pines and cypresses of the lowlands of the South Atlantic States is very distinctive. The bird draws attention to itself by this song, which has been written *ching-ching-ching, chicker-cher-wee* and has the ringing character of the Water-Thrush, and the clear distant note of the Indigo Bunting. If one is fortunate enough to be present when the bird comes down into the lower limbs of the forest trees he will see his most attractive yellow throat and see, too, how deliberate is his

YELLOW-THROATED WARBLER (nat. size)

Courtesy of Am. Mus. Nat. Hist.

manner. There is nothing of the excitable disposition that is called "Warbler-like." When he is in a mood to sing, back he goes to the top of a cypress and pours forth his song, often for some minutes, standing quietly on one limb of the tree.

The Sycamore Warbler of the south-central States seems to give his preference to the sycamore trees, and is well named the Sycamore Yellow-throat. Neither is he a very common bird, but his song and beauty are the characteristics that attract people to him.

GRACE'S WARBLER

Dendroica graciæ *Baird*

A. O. U. Number 664

General Description.— Length, 5 inches. Upper parts, gray streaked with black; under parts, yellow and white. Bill, shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, even or nearly even.

Drawing by R. I. Brasher

GRACE'S WARBLER (¾ nat. size)

A pretty bird with graceful manners

Color.— Adult Male in Spring and Summer: *Above, slate-gray, the crown and back, streaked with black* (sides of crown, sometimes uniformly black); wings and tail, dusky with slate-gray edgings, the middle wing-coverts broadly, the greater coverts more narrowly, tipped with white, forming two distinct wing-bands; two outermost tail-feathers with inner webs extensively white at the end (the white occupying more than the end half on outermost feather, which also has the outer web largely white), the third feather also usually with an elongated white patch at the end or near the end; over the eye a stripe of yellow passing into white beyond eye; a broad dusky loral streak and a narrow dusky streak at corner of mouth; sides of head and sides of neck, plain slate-gray; *spot below eye, cheek, chin, throat, and chest, lemon-yellow;* remaining under parts, white, with sides of chest and breast, sides, and flanks, streaked with black; bill, black; iris, brown; legs and feet, dusky-brown. Adult Female: Similar to the adult male but duller in color; gray of upper parts, strongly tinged with brown, the black streaks on back, indistinct (sometimes obsolete); white wing-bands, narrower; yellow of stripe over eye, throat, etc., paler; white of under parts, rather duller, and blackish streaks on sides, etc., less distinct.

Nest and Eggs.— Nest: High in pine trees, 50 to 60 feet up; composed of vegetable fiber, straws, string, bud scales, and insect webs. Eggs: 3 or 4, lightly spotted with reddish-brown.

Distribution.— Southwestern United States and adjacent parts of northwestern Mexico; northward through mountains of New Mexico and Arizona to southern Colorado, where abundant in coniferous forests; winters in Mexico.

Grace's Warbler was discovered in 1864 by the great naturalist, Dr. Elliott Coues, who gave the bird his sister's name. It is a pretty name and was a pretty compliment of a kind which ought to have been paid oftener by American ornithologists to their women relatives and friends — in fact, at least as often as there were pretty names available.

Also it is a pity that Americans see so little of this Warbler, because its appearance and its ways are as pretty as its name. But these are facts which are appreciated only by the comparatively few persons who visit or live in the southwestern part of this great country, especially the regions near the Mexican boundary. The bird is, indeed, one of the commonest of its

family in Arizona, and is of quite frequent occurrence especially in the neighborhood of that most wonderful wonderland, the Grand Cañon of the Colorado. Here it is found working in the tops of the yellow pine trees, much after the manner of other Warblers. It is also frequently found in similar forests on the Guadalupe Mountains of Texas.

BLACK-THROATED GRAY WARBLER

Dendroica nigrescens (*J. K. Townsend*)

A. O. U. Number 665

General Description.—Length, 5 inches. Fore parts, black; upper parts, gray; under parts, white. Bill, shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, even.

Color.—ADULT MALE: *Head, uniform black, relieved by a broad stripe of white over ear (extending forward to above middle of eye), a small spot of yellow in front of eye*, and a broad cheek stripe of white, extending from lower base of bill to sides of neck, confluent on chin; whole throat and chest, uniform black; rest of under parts, white broadly streaked on the sides with black; hindneck, back, shoulders, rump, and upper tail-coverts, slate-gray or plumbeous, streaked (except on hindneck, and sometimes on rump) with black; wings and tail, black or dusky with gray edgings, the middle and greater wing-coverts, broadly tipped with white, forming two conspicuous wing-bands; inner webs of two outermost tail-feathers mostly (sometimes entirely) white, the third feather with end half or more, white, the fourth also with white on terminal portion; bill, black; iris, brown; legs and feet, dusky-brown, sometimes nearly black. ADULT FEMALE: Sometimes scarcely different from the adult male, having the crown and whole throat uniform black, as in that sex, but with gray of upper parts duller; usually, however, with the crown gray (except on the sides), streaked with black; the throat mostly white with a black or dusky patch on each side of lower throat; white of under parts, less pure, with streaks on sides and flanks narrower and grayish dusky; gray of upper parts, duller, with dusky streaks on back and upper tail-coverts much narrower, sometimes nearly obsolete.

Nest and Eggs.—NEST: Low in dense thickets of manzanita, scrub oak, or willows or high among the conifers; compactly constructed, cup-shaped, of plant fibers, grasses, and a few leaf stems and lined with feathers. EGGS: 3 or 4, pinkish-white or cream spotted around larger end with reddish-browns and purple.

Distribution.—Western North America; breeds from southern British Columbia, Nevada, northern Utah, and northwestern Colorado south to northern Lower California, southern Arizona, and northern New Mexico; winters in southern Lower California and in Mexico.

When the wise men gave names to the different birds, the Black-throated Gray Warbler got its name from the male, for he only has the black throat. His wife wears a white cravat, and, according to my idea, she is a good deal more important in Warbler affairs than he is. This impression was gained by watching at the nest after the eggs were hatched and the young birds were being fed. Mr. Warbler seemed to be away from home practically all the time. He evidently thought his shyness was a good excuse to stay away and let his wife take the burden of hunting food for the young birds.

One day as I was walking along Fulton Creek, I saw one of these Warblers fidgeting on a limb with a straw in her bill. This was interesting, because I had searched this locality trying to find the nest for some time. The site of the nest was twelve feet from the ground in the top of a sapling. It was very advantageously located because just at the side of the sapling was the sawed-off trunk of a fir that was three and a half feet across. Upon this we could climb and aim our camera straight into the nest.

The mother returned home and found two men with a big one-eyed monster, the camera, close to her children. She was scared almost out of her senses. She fell fluttering from the top of the tree. She caught quivering on a limb a foot from my hand. But she couldn't hold on; she slipped through the branches and clutched my shoe. I never saw such an exaggerated case of chills or heard such a pitiful high-pitched note of pain. I stooped to see what ailed her. She acted as if both wings were broken. But a moment later, she limped under a bush and suddenly got well.

The first day I met the male Black-throated Gray face to face, we were trying to get a photograph of the mother as she came to feed. She had got quite used to the camera. We had it leveled at the nest only a yard distant. A gray figure came flitting over the tree-tops and planted himself on a limb right beside his home.

He carried a green cut-worm in his mouth. No sooner had he squatted on his accustomed perch than he caught sight of the camera. With an astonished chirp, he dropped his worm, turned a back somersault and all I saw was a streak of gray curving up over the pointed firs.

The mother foraged the firs for insects of all sizes and colors. She often brought in green cut-worms which she rolled through her bill as a house-wife runs washing through a wringer, either to kill the creature or to be sure it was soft and billsome. This looked like a waste of time to me. The digestive organs of those bob-tailed bantlings seemed equal to almost any insect I had ever seen.

In the days I spent about the nest, I never saw the time when both the young birds were not in a starving mood, regardless of the amount of dinner they had just swallowed. I don't believe the mother ever saw her children when their mouths were not open. After watching about the home for several days with camera and note book, I discovered that the mother was very impartial to her children. While I could not tell one of the young birds from the other, the mother seemed to be able to do it, for she fed them in turns regardless of position.

Photo by W. L. Finley and H. T. Bohlman

MOTHER BLACK-THROATED GRAY WARBLER FEEDING CUT-WORMS TO YOUNG

The Black-throated Gray Warbler, like the others of its kind, is restless, flitting from tree to tree and singing at times almost constantly. Mrs. Florence Merriam Bailey says, "Its song is a simple Warbler lay, *Zee-ee-zee-ee, ze, ze, ze,* with the quiet woodsy quality of *Virens* [Black-throated Green Warbler] and *Cœrulescens* [Black-throated Blue Warbler], so soothing to the ear."

WILLIAM L. FINLEY.

BLACK-THROATED GREEN WARBLER

Dendroica virens *(Gmelin)*

A. O. U. Number 667 See Color Plate 97

Other Names.— Green Black-throated Flycatcher; Evergreen Warbler; Green Black-throat.

General Description.— Length, 5 inches. Upper parts, olive; under parts, yellow, black, and white. Bill, shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, notched.

Color.— ADULT MALE: Crown, hindneck, back, shoulders, and rump, plain yellowish olive-green, the

Courtesy of the New York State Museum

BLACKBURNIAN WARBLER *Dendroica fusca* (Muller)
FEMALE MALE

BLACK-THROATED GREEN WARBLER *Dendroica virens* (Gmelin)
MALE FEMALE

REDSTART *Setophaga ruticilla* (Linnaeus)
MALE FEMALE

MAGNOLIA WARBLER *Dendroica magnolia* (Wilson)
MALE IMMATURE FEMALE

All ½ nat. size

back sometimes (more rarely the crown and rump also) narrowly streaked with black, and the forehead sometimes with an oval center spot of yellowish; *sides of head and neck, including whole cheek region and a broad stripe over eye, clear lemon-yellow*, relieved by a streak of olive-green behind eye, this sometimes involving greater part of the side of head; *chin, throat, and chest (sometimes sides of breast also), uniform black*, the first, sometimes partly yellow; rest of under parts, white or yellowish white, the breast usually tinged (sometimes strongly) with yellow; sides and flanks, heavily streaked with black, these streaks usually confluent forward with the black throat-patch at its rear margin; wings and tail, dusky with slate-gray edgings, the middle and greater wing-coverts, broadly tipped with white forming two conspicuous bars across wing; inner webs of two side tail-feathers, mostly white, that of the third with a large white end spot, the two outermost with outer webs extensively white; bill, blackish; iris, brown; legs and feet, dark horn-brown. ADULT FEMALE: Similar to the adult male, but chin and throat, usually whitish or pale yellowish, the black of lower throat (if present there) and chest broken (sometimes almost hidden) by whitish tips to the feathers; sides of breast, never uniform black.

Nest and Eggs.— NEST: Nearly always in an evergreen from 15 to 40 feet up, on a limb some distance from the trunk; compactly built of rootlets, bark strips, grasses, wool, and feathers and lined with hair and vegetable down. EGGS: Commonly 4, creamy-white, spotted with chestnut, brown, and lilac-gray mixed with a few darker spots.

Distribution.— North America; north to Nova Scotia, shores and islands of Gulf of St. Lawrence, Newfoundland, southern shores of Hudson Bay, Alberta, etc.; breeding southward to mountains of Connecticut, New York, and Pennsylvania, northeastern Illinois, and along higher Alleghenies to eastern Tennessee, western North Carolina, and northwestern South Carolina; west to edge of the Great Plains; in winter south to West Indies and through eastern Mexico and Central America (Guatemala and Costa Rica) to Panama; occasional in West Indies; accidental in Arizona, Greenland, and Helgoland.

Just as the Black-throated Blue loves the laurel, the Black-throated Green is a devoted habitué of the evergreen groves and forests — of pine, spruce, hemlock. Its drowsy song is one of the typical sounds of the pineries in the warm days of summer, not only in the North, as with the Blackburnian, but well down into the middle States. It is apt to keep well up in the tall trees, and is more readily heard than seen. But patient watching will at length be rewarded by a glimpse of the deliberate little singer flitting through the needle foliage, hanging head downward, to investigate an insect, or hovering before a cluster. Though not confined to evergreens, it is seldom seen, except in migration, at any great distance from its native element.

Since it is quite abundant in many a pinery, it would not appear hard to find its nest. But this

Courtesy of Am. Mus. Nat. Hist.

BLACK-THROATED GREEN WARBLER (¾ nat. size)

A devoted habitué of the evergreen groves and forests

is the secret of the pines and one which is not easy to discover. Usually it is well up in the thickness of the needles, out on some branch, hard indeed to see from the ground. Sometimes however, it is in thick low evergreen growths, but even there it is not much easier to find. As a boy this nest was my despair, and I was long in finding one, in the crotch of a white pine, next to the trunk, some twenty feet up.

Photo by H. K. Job

MALE BLACK-THROATED GREEN WARBLER AT NEST

Though a retired forest dweller, the Black-throated Green is rather a familiar little bird. A nest which I found, in a recent year, gave me wonderful insight into its pretty ways. It was in an unusual situation, in a crotch by the main trunk of one of five chestnut sprouts, growing from the same root, only eleven feet from the ground. As I looked into the then empty new nest, I heard a faint chirp, and there were the little couple right at my elbow.

Many a time through the period of the rearing of that family did I climb an adjacent sprout, and, only two feet from the nest, watch the feeding of the birdlets by the parents, and take photographs of them. When they were nearly grown, I held them in my hand, and the handsome male, perching on my finger tips, tucked grubs into their widely stretched little mouths. One day quite a party came with me to enjoy this sight. A young lady, skeptical of results, was induced to hold one of the little birds. Suddenly the brilliant male alighted on her thumb, to feed the chick, and so startled her that she nearly lost her balance. Then he hopped on her hat as though to see whether he would make becoming trimming for millinery! But no; these feathered gems were made only for nature's foliage, to add the final touch of charm and grace to an already wonderful creation.

HERBERT K. JOB.

TOWNSEND'S WARBLER

Dendroica townsendi (*J. K. Townsend*)

A. O. U. Number 668

General Description.—Length, 5 inches. Fore parts, black; upper parts, olive; under parts, yellow and white. Bill, shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, even or nearly even.

Color.—ADULT MALE IN SPRING AND SUMMER: Crown, hindneck, head, chin, throat, and upper chest, uniform black; a broad stripe over eye, broad cheek stripe (curving upward on side of head, and joining rear extremity of the eye stripe), a spot below eye, *lower chest, and breast, clear lemon-yellow;* abdomen, flanks, and under tail-coverts, white; sides and flanks, heavily streaked with black, the forward streaks joining the black throat-patch at rear; under tail-coverts with a center streak of blackish; back, shoulders, rump, and shorter upper tail-coverts, yellowish olive-green, each feather with a central, wedge-shaped spot of black, these markings concealed on rump; longer upper tail-coverts, black centrally, broadly margined with slate-gray; wings and tail, blackish with light gray edgings, and the middle and greater wing-coverts, broadly tipped with white, forming two conspicuous bars across wing; inner webs of three side tail-feathers extensively white at the end, this occupying the end half or more of the outermost feather; bill, blackish; iris, brown; legs and feet, dark horn-brownish. ADULT MALE IN AUTUMN AND WINTER: Similar to the spring and summer plumage, but all the black areas much broken or obscured; that of crown and hindneck by broad olive-green margins to the feathers, the black forming central streaks,

that of the side of head overlaid by olive-green tips to the feathers, and that of the throat replaced by nearly uniform lemon-yellow, with black appearing as spots or blotches on sides of chest; black streaks of back, etc., concealed. ADULT FEMALE: Very similar in coloration to the autumn and winter adult male, but black streaks on upper parts much narrower (sometimes nearly obsolete, usually mere shaft-lines), the streaks on sides also usually narrower, sometimes indistinct; crown, sometimes blackish, and throat often blotched with black, occasionally extensively so.

Nest and Eggs.— NEST: Usually in willows about 4 feet from ground; constructed of decayed plant fibers, leaves, and roots and lined with rootlets, hair, and plant down. EGGS: 3 or 4, spotted mainly around larger end with brown, lavender, and burnt-umber.

Distribution.— Western North America; breeding from mountains of southern California to Alaska, eastward to eastern Oregon, northwestern Idaho, etc.; during migration eastward to Rocky Mountains, western Texas and southward over western and central Mexico to highlands of Guatemala, Tres Marias Islands, and extremity of Lower California; occasionally eastward to South Carolina.

The Townsend Warbler is perhaps our most beautiful Warbler of the West. To me, its beauty is increased by its shyness. One does not get a good chance to study this restless bird, because, Warbler-like, it is always moving, especially among the firs and hemlocks which, because of their height and density, are not at all favorable for bird study.

I have never found the Townsend Warbler nesting, but I see it occasionally through Oregon and California during the winter season when it is always on the travel. During the season of migration, one may often see this bird traveling with a flock of Audubon Warblers.

Mr. William L. Dawson characterizes the song and the hunting actions of the Townsend Warbler as follows: "The song ran, *dzwee, dzwee, dzwee, dzweetsee*, the first four notes drowsy and drawling, the fourth prolonged, and the remainder somewhat furry and squeaky. The bird hunted patiently through the long needles of the pine, under what would seem to an observer great difficulties. Once he espied an especially desirable tidbit on the under side of a needle-beset branch. The bird leaned over and peered beneath, until he quite lost his balance and turned a somersault in the air. But he returned to the charge again and again, now creeping cautiously around to the under side, now clinging to the pine needles themselves, and again fluttering bravely in the midst, until he succeeded in exhausting the little pocket of provender, whatever it was."

WILLIAM L. FINLEY.

Drawing by R. I. Brasher

TOWNSEND'S WARBLER (¾ nat. size)

The "most beautiful warbler of the West." - Finley

HERMIT WARBLER

Dendroica occidentalis (*J. K. Townsend*)

A. O. U. Number 669

General Description.— Length, 5 inches. Head, yellow and black; upper parts, gray streaked with black; under parts, white. Bill, shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, even or nearly even.

Color.— Adult Male: *Forehead, crown, and whole side of head, down to and including cheeks and sides of neck, clear lemon-yellow*, the crown usually spotted or flecked with black; back of head, black; hindneck streaked with black and grayish olive-green, in varying relative proportions (sometimes nearly uniform black); back, shoulders, rump, and upper tail-coverts, gray, usually tinged with olive-green, broadly streaked with black (the black streaks narrower, sometimes obsolete, on rump); wings and tail, black with light gray edgings, the middle and greater wing-coverts broadly tipped with white, forming two distinct bars across wing; inner webs of two outermost tail-feathers extensively white, this occupying most of the web on the first and about the end half on the second, the third feather usually with a white longitudinal spot or streak near tip, and the first with outer web largely white; chin, throat, and upper chest, uniform black, this black area with a convex outline at the rear; rest of under parts, white, usually faintly shaded toward the sides with gray and sometimes narrowly and indistinctly streaked on sides with dusky; bill, blackish; iris, brown; legs and feet, dark horn-brown, sometimes blackish. Adult Female: Similar to the male, but darker gray above and forehead and crown largely (often mostly) yellow; throat, whitish spotted with dusky; and dusky streaks on back, etc., still narrower, often obsolete; under parts, also similar, but body portions less tinged with brownish, the chest often with a dusky patch (its feathers tipped with whitish) extending more or less over throat, sometimes covering whole throat.

Nest and Eggs.— Nest: In coniferous trees from 25 to 40 feet up, constructed of weed stems, fibrous stalks of plants, pine needles, and small twigs, bound by cobwebs, and lined with soft fine strips of bark and hair. Eggs: 3 or 4, dull white or grayish-white, spotted and blotched chiefly around larger end with browns and lilac-gray.

Distribution.— Pacific coast district of United States; breeding on higher mountains of California, and northward to British Columbia (chiefly west of the Cascade range); in winter south into Lower California and through Arizona, over Mexican plateau to highlands of Guatemala.

The yellow head, black throat, and white breast and belly of the Hermit Warbler are so characteristic that it can hardly be confused with any other bird within its range; and it has a Chickadee-like trick of hanging upside down to the end of twigs which is also distinctive. It is essentially a bird of the great forests of conifers, where it is found much more frequently than in any other surroundings. Its plumage markings make it one of the most conspicuous of the small birds of the great Sierra Nevada forests. Its characteristic song, which a western ornithologist (Barlow) transliterates *tsit, tsit, tsit, tsit, chee, chee, chee*, the last three syllables uttered more rapidly than the first four, though not strong, is penetrating and has considerable carrying power.

Mr. Finley says: "My experience with the Hermit Warbler is that it is shy and retiring and therefore has a good name. It is not very common through western Oregon. The only nest I have found of the bird was in an oak tree. In western Oregon, it lives more in the firs and oaks."

KIRTLAND'S WARBLER

Dendroica kirtlandi (*Baird*)

A. O. U. Number 670

Other Names.— Jack-pine Warbler; Jack-pine Bird.

General Description.— Length, 5½ inches. Upper parts, gray; under parts, yellow. Bill, shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, notched.

Color.— Adult Male: Crown, hindneck, sides of neck, and head, bluish slate-gray, the first usually streaked with black; front of forehead, lores, and space between lower eyelid and cheeks, black, gradually blending behind into the gray of the sides of head; *a white crescentic spot or bar on lower eyelid*, and a smaller, narrower mark of white on upper eyelid; back

and shoulders, brownish-gray, broadly streaked with black; rump and upper tail-coverts, slate-gray, narrowly (sometimes obsoletely) streaked with black; wings and tail, dusky with pale brownish-gray or grayish-brown edgings, the middle and greater wing-coverts margined near the tips with paler brownish-gray or grayish-brown, sometimes approaching dull white; inner webs of two outermost tail-feathers with a terminal white spot, this about three-fourths of an inch long on the lateral feathers; cheeks, chin, throat, and rest of under parts, pale lemon-yellow, fading into white on under tail-coverts; sides and flanks, grayish streaked with dusky, *the pronounced gray area on each side of breast separated from the yellow of the central portion by a series of broad black streaks;* chest, usually with a few small flecks of dusky, sometimes immaculate yellow; bill, blackish; iris, brown; legs and feet, dark horn-brownish. ADULT FEMALE: Similar to the adult male, but duller in color; the bluish slate-gray of crown, hind-neck, and rump replaced with brownish-gray; black streaks of back and shoulders rather narrower; yellow of under parts averaging slightly paler, and chest more frequently as well as more extensively speckled or flecked with dusky.

Nest and Eggs.— NEST To Mr Norman A. Wood belongs the honor of discovering the nest and eggs of this species, in Michigan. We quote from his article in the *Bulletin* of the Michigan Ornithological Club, March, 1904 "The nest was built in a depression in the ground, at the foot of a jack-pine about five feet tall, and was only five feet from the road. It was partly covered with low blueberries and sweet fern plants. The nest is two inches inside diameter and the same in depth, very neat and compact, and is composed of strips of soft bark and some vegetable fiber, thickly lined with fine dead grass and pine needles. A few hairs from horses' manes or tails complete the lining. EGGS: A delicate pinkish-white thinly sprinkled with several shades of brown spots forming a sort of wreath at the larger end."

Distribution.— Eastern United States and more southern British provinces, chiefly west of the Alleghenies; very irregularly distributed; breeds in Oscoda, Crawford, and Roscommon counties, Michigan; in migration recorded from Minnesota, Wisconsin, Ontario, Ohio, Illinois, Indiana, Missouri, Virginia, South Carolina, Georgia, and Florida; winters in the Bahamas.

Kirtland's Warbler was discovered by Dr. J. P. Kirtland near Cleveland, Ohio, May 13, 1851. He captured a male bird which was scientifically examined, and credited by both Latin and common names to the discoverer. Just as Columbus did not discover America, so it was found, years after Dr. Kirtland's discovery, that as far back as October, 1841, Dr. Samuel Cabot of Boston captured a male on shipboard near the Bahamas. By 1879 there were but nine known specimens of this bird. To this day it is the rarest of North American Warblers. Its winter home has been found in the Bahamas and there only, and its breeding home in Michigan. In 1903 Norman A. Wood located its nesting district in a comparatively small area in the upland between Lakes Michigan and Huron, and between fifty and a hundred and fifty miles south of Mackinaw. No other breeding ground is known. No winter home has been found except the Bahamas. Between these two localities a few stray migrating Kirtland's Warblers have been seen. The records, few as they are, show that the birds are widely scattered during the northward migration.

In the museum the bird looks not unlike a Magnolia Warbler, but with a plainer tail and no spots across the yellow breast. In action it much resembles the Palm Warbler, particularly in a wagging motion of the tail. It has a very stiff and erect attitude in singing.

Norman A. Wood and J. A. Parmelee made thorough studies of the bird in Michigan not far from Mr. Parmelee's home. What they have to say is very nearly all that is known of the breeding habits of the bird. The bird is a frequenter of high, sandy jack-pine plains; makes its home in jack-pine and scrub oak; nests on the ground; walks gracefully over its feeding grounds, and is equally at home in trees or on the ground. It is called by the natives Jack-pine Bird. The song has an Oriole quality and sings very forcibly *chip-chip-che, chee, chee-r-r-r*. From soft and short, the song changes to a clear quick whistle on the *r*. Other songs have been noted with variations.

This bird is so rare that the report of an observation of it would be apt to be doubted by the ornithologists, crediting the observation rather to some more common bird. But no one knows how many times the searchers for Warblers in May have hoped and searched with enthusiasm to see this not impossible find.

L. NELSON NICHOLS.

PINE WARBLER

Dendroica vigorsi (*Audubon*)

A. O. U. Number 671 See Color Plate 95

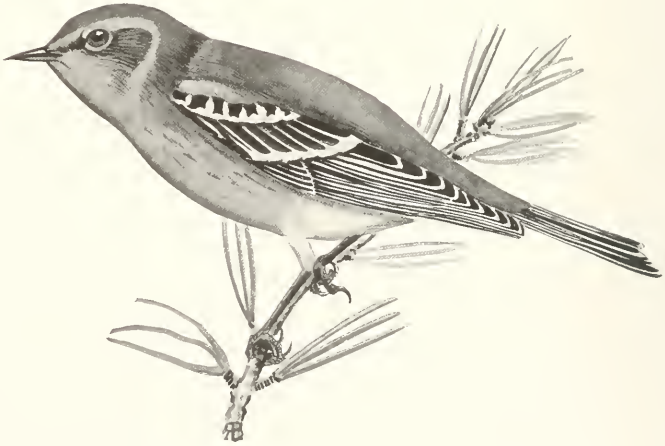
Other Names.—Pine-creeping Warbler; Pine Creeper.

General Description.—Length, 5¾ inches. Upper parts, olive-green; under parts, yellow streaked with olive. Bill, shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, notched.

Color.—Adult Male: *Above, plain bright olive-green*, usually becoming more grayish on shoulders; wings and tail, dusky with dull gray edgings, the middle and greater wing-coverts broadly tipped with dull white or pale gray, producing two distinct bands; inner webs of two outermost *tail-feathers, extensively white at the end, the white on lateral feather occupying nearly the end half*, the outer web also edged with white; sides of head and neck, olive-green, the former relieved by a narrow, usually indistinct, streak over eye and a crescentic spot of yellow below eye, the lores, usually darker olive-green, often becoming dusky in front of eye; cheek, chin, throat, chest, and breast—usually upper portion of abdomen also—yellow, the sides of chest and breast usually streaked with olive-greenish, sometimes distinctly streaked with dusky; rear under parts, dull whitish, the under tail-coverts, gray basally; bill, brownish-black; iris, brown; legs and feet, dusky-brown. Adult Female: Smaller and much duller in color than the male; above, plain olive or dull olive-greenish, inclining to gray on hindneck and shoulders, sometimes almost wholly dull gray; beneath, pale olive-yellowish in front and dull whitish behind, sometimes wholly dull grayish-white, faintly tinged with yellow on chest, the sides and flanks more strongly tinged with olive or grayish, and sometimes obsoletely streaked with darker, especially on sides of chest; wings and tail, as in the male.

Nest and Eggs.—Nest: Always placed on horizontal limb of pine or cedar, from 6 to 80 feet up, firmly attached and built of strips of grapevine bark, rootlets, leaf stems, and caterpillar silk, lined warmly with deer or other animal hair, this forming a thick ring around the rim. Eggs: Commonly 4, varying from dull white to pale grayish-lilac, marked with specks and spots of brown, umber, and lilac, usually forming a wreath around larger end.

Distribution.—Eastern United States and more southern British Provinces, north to Minnesota, Manitoba (to Lake Winnipeg), Ontario, New York, southern Maine, and New Brunswick; breeding southward to southern Florida and Gulf States, wintering in Southern States (Florida to Texas) and northward to coast district of Virginia, southern Illinois, etc., occasionally to Massachusetts; occasional in Bermudas.



Drawing by R. I. Brasher

PINE WARBLER (¾ nat. size)

An inconspicuous Warbler, singing its sweet song from the higher parts of the pine trees

The Pine Warbler is a well-named bird, because its nesting sites are always in pine trees. In migration the bird may be found in Warbler flocks in any kind of tree growth, but looking very plain and drab for the bright company in which it finds itself. Wherever there are pines in the States east of the plains and in southern Canada, there the Pine Warblers may be found nesting in the spring. They are common in the pine barrens all the way from Florida to New Jersey and Illinois. North of that they are rare and local. In the winter they retreat to the southern part of the breeding range and enter the straggling winter flocks.

Dr. Elliott Coues says that in the winter in Florida "the bird is of a sociable if not gregarious nature, usually going in straggling companies of its own kind, and often mixing with Titmice, Kinglets, and Nuthatches, the whole throng gaily and amicably flitting through the shady woods, scrambling incessantly on and all around the branches of the trees in eager, restless quest of their minute insect food."

In the winter he begins to sing his monotonous sweet trill and is very persistent at his single tune until the breeding season is over. Then he becomes again the creeper over pitch and red pines that gave him the earlier name of Pine Creeper.

Courtesy of Nat. Asso. Aud. Soc.

YOUNG PINE WARBLER

PALM WARBLER

Dendroica palmarum palmarum (*Gmelin*)

A. O. U. Number 672. See Color Plate 95

Other Names.—Yellow Red-poll; Yellow Red-poll Warbler; Wagtail Warbler; Tip-up Warbler; Yellow Tip-up.

General Description.—Length, 5 inches. Upper parts, grayish-olive; under parts, yellow and whitish; crown and streaks on under parts, chestnut. Bill, shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, notched.

Color.—ADULTS (SEXES ALIKE) IN SPRING AND SUMMER: *Forehead and crown, uniform bright chestnut*, the former sometimes blackish in front where divided by a short and narrow center line of whitish or pale yellowish; rest of upper parts, grayish-olive narrowly and indistinctly streaked with darker, especially on back and shoulders; lower rump and upper tail-coverts, light yellowish-olive or olive-greenish, the larger coverts more brownish, with indistinct streaks of darker; wings and tail, dusky with light grayish-brown edgings, these most distinct on the end portion of middle and greater wing-coverts; inner web of two outermost tail-feathers with a large spot of white, the third sometimes with a small spot of the same; over eye, a narrow stripe of pale yellow; a triangular spot of dusky in front of eye, and a similar but smaller spot behind the eye; sides of head, grayish-brown, sometimes finely streaked in front with dull brownish-white; an indistinct space below eye of dull brownish-white; cheeks, dull whitish, sometimes tinged with yellow; chin, throat, chest, and under tail-coverts, canary-yellow, the intervening under parts (breast and abdomen), dull whitish, usually tinged with yellow; chest (at least on the sides), streaked with brown or chestnut, the sides and flanks less distinctly streaked; sometimes a series of brown or chestnut streaks along each side of throat; bill, brownish-black; iris, brown; legs and feet, dusky-brown. ADULTS IN WINTER: Forehead and crown, grayish-brown, streaked with dusky, sometimes with a slight admixture of chestnut, mostly concealed; the strip over the eye, chin, throat, and chest, dull white instead of yellow; otherwise like the spring and summer plumage, but back, etc., browner, and with darker streaks less distinct (sometimes obsolete).

Nest and Eggs.—NEST: On the ground and usually well concealed under a tuft of grass or other vegetation; compactly constructed of fine dry grasses, strips of bark, and moss. EGGS: 4, creamy white, spotted and blotched with reddish-brown, purple, and lavender, more heavily around large end.

Distribution.—Eastern North America, chiefly west of the Alleghenies; breeding in the interior of British America (Keewatin south to northern Minnesota); in winter southern Florida, Bahamas, Greater Antilles, Cozumel Island, Yucatan, and Swan Island, and island of Old Providence, Caribbean Sea; occasional, during migration, in Atlantic States and at eastern base of Rocky Mountains.

The Palm Warbler is the ever-tilting Warbler that comes into the Northern States in April generally a little ahead of the main Warbler flock and greets us from the small bushes near water. This tilting or waving of the tail up and down is the one characteristic that attracts the casual observer to the bird and it has given the names Tip-up Warbler and Yellow Tip-up to the bird.

The Palm Warbler nests in the very northern part of Minnesota and farther north to the Great Slave Lake and west of Hudson Bay. The Yellow Palm (*Dendroica palmarum hypochrysea*) breeds in northern Maine and eastern Canada.

In the fall the Palm comes down into the Mississippi valley, spreading out over a large area; a few even appear along the Atlantic coast from southern New England all the way to Florida, where they focus into the narrow peninsula. The Yellow Palm, on the other hand, comes down through the Atlantic coast States in the fall and meets the Palm in Florida. Then through the winter, both varieties fraternize in the Florida palms and pine fields and fences, gardens and streets, and are among the commonest of the winter birds of the peninsula. The Palm Warbler far outnumbers the Yellow Palm in Florida. Not only this, but the Palms overflow into the West Indies where the Yellow Palm is not found.

The line over the eye is always yellow in the Yellow Palm; in the Palm it is yellow in the spring but white in the fall. The stronger yellowish underparts of the Yellow Palm are a distinctive mark at any season. Even in the spring, when they come tilting back north and separate in Georgia for their two routes, it is not safe to guess that all eastern individuals are Yellow Palms and all central individuals Palm Warblers; they have been known to go astray. The *tsee, tsee* trill is common to both. The love of the water courses and the eternal tilting are the same. Only the yellow and lack of yellow are distinctive marks for the casual observer.

L. Nelson Nichols.

PRAIRIE WARBLER

Dendroica discolor (*Vieillot*)

A. O. U. Number 673 See Color Plate 95

General Description.— Length, 4¾ inches. Upper parts, olive-green; under parts, yellow with black streaks. Bill, shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, notched.

Color.—Adult Male: Above, yellowish olive-green, brightest on crown and hindneck, slightly intermixed with grayish on upper tail-coverts; *back-feathers, chestnut centrally*, margined or edged with olive-green; wings and tail, dusky with pale grayish-olive edgings, the middle wing-coverts broadly tipped with pale yellow, the outer webs of greater coverts sometimes yellowish at the ends; inner webs of three outermost tail-feathers, extensively white at the ends, this occupying approximately one-half the web on side feathers, successively smaller on the next two; stripe over eye, large crescentic spot below eye, cheeks, and under parts, clear lemon-yellow, paler behind (under tail-coverts, primrose-yellow); a loral streak and a short streak behind eye, a broad curved streak or crescentic patch immediately beneath the yellow spot below eye, and a series of broad streaks beginning on sides of lower throat and continued along sides to flanks, black; bill, dark brown; iris, brown; legs and feet, dusky-brown. Adult Female: Similar to the male and sometimes hardly distinguishable, but usually much duller in color, with the chestnut spots on back indistinct (often obsolete); the black markings on sides of head replaced by dull grayish, and the black streaks along sides less distinct, especially on flanks, where grayish, or obsolete; olive-green of upper parts sometimes partly replaced by grayish, and yellow of lower parts by dull whitish.

Nest and Eggs.— Nest: Usually placed in hickory, dogwood, or maple saplings, barberry, viburnum or low bushes, sometimes in scrub pines or cedars, on dry hillsides and cut-over areas; firmly woven of weed stems, dry grasses, vegetable fibers and stems, and lined with horse-hair. Eggs: Usually 4, white or greenish-white, spotted and blotched with burnt-umber, chestnut, purplish, and lilac-gray.

Distribution.— Eastern United States, breeding north to Massachusetts, southern Ontario, southern Michigan, southern Wisconsin (?), etc., south to Florida, and probably to the Gulf States in general; occurring irregularly north to northern Michigan; west to edge of the Great Plains, in eastern Nebraska, eastern Kansas, etc.; winters from central Florida through the Bahamas and the West Indies.

The Prairie Warbler is not very common on the prairies. It is rather a bird of the southern shrubs and short trees. In most favorable localities from Georgia to Virginia this Warbler nests commonly. Northwest, north and northeast of Virginia it breeds sparingly and locally. Some old fields and bush lots of southern New England, especially if there are barberry and juniper,

may attract the Prairie Warblers. In very scattered numbers they may be found from New Jersey and New York to Kansas and Nebraska, but only in the bushes and not on the prairie grasslands. They are distinctly birds of the hillsides. Their chestnut markings on the back are excellent distinguishing characteristics. Better yet is the peculiar song consisting of a thin wiry, lisping trill that can be confused with the song of no other bird. Dr. Elliott Coues in *Birds of the Northwest* gave an interesting account of his bird trips near Washington in his college days. The Prairie Warbler was one of his earliest acquaintances. "Ten to one we would not see the little creatures at first; but presently, from the very nearest juniper would come the well-known sounds. A curious song, if song it can be called — as much like a mouse complaining of the toothache as anything else I can liken it to — it is simply indescribable. Then perhaps the quaint performer would dart out into the air, turn a somersault after a passing midge, get right side up, and into the shrubbery again in an instant; or if we kept still, with wide-open eyes, we would see him perched on a spray, settled firmly on his legs, with his beak straight up in the air, the throat swelling, and hear the curious musician."

OVEN-BIRD

Seiurus aurocapillus (*Linnæus*)

A. O. U. Number 674. See Color Plate 92

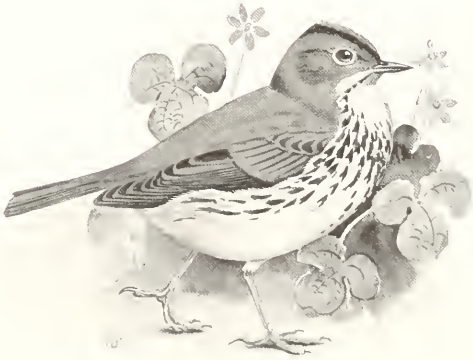
Other Names.— Golden-crowned Thrush; Teacher; Nightingale; Wood Wagtail; Golden-crowned Wagtail; Golden-crowned Accentor.

General Description.— Length, 6¼ inches. Upper parts, olive; under parts, white with black spots. Bill, shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, even or slightly notched.

Color.— ADULTS (SEXES ALIKE): Crown with *two narrow lateral stripes of black inclosing a much broader center stripe of tawny*, the feathers of the latter tipped with pale olive, especially on back of head which is sometimes uniform light olive; over eye, light grayish-olive fading into a lighter hue of the same on sides of head; rest of upper parts, plain dull olive-green, the inner webs of wing- and tail-feathers, grayish-brown; a whitish eye-ring; lores, grayish-white or dull whitish; cheeks and under parts, white, the chest and sides heavily streaked with black, the flanks more narrowly and less distinctly streaked; a dusky streak below cheeks; under wing-coverts, pale olive-yellow; bill, dark brown, much paler below; iris, brown; legs and feet, pale flesh color in life.

Nest and Eggs.— NEST: Imbedded in ground in dry woods; of dried grass, artfully arched over with dead leaves and so perfectly blending with its surroundings as to be rarely discovered unless the bird is scared from the nest. EGGS: 3 to 6, glossy white marked by specks and spots scattered over entire surface usually more thickly around larger end.

Distribution.— Eastern North America; north to Nova Scotia, Anticosti Island, Labrador (?), southern



Drawing by R. I. Brasher

OVEN-BIRD (⅔ nat. size)

The precision of this bird's gait approaches the unconsciously comical

and western shores of Hudson Bay, and the Yukon Valley in Alaska; west to eastern base of Rocky Mountains in Colorado and Montana, accidentally to British Columbia; breeding southward at least to Virginia, the Ohio Valley, and Kansas, probably much farther, and in the Bahamas; in winter, Gulf coast of United States, Bahamas, Greater Antilles, Swan Island and Old Providence Island, Caribbean Sea, and through Mexico into Central America, and northern South America (Colombia).

Most land birds of terrestrial habits progress on the ground by jumping or running. Comparatively few species walk, and the commoner of these include the Crow, the Larks, the Starling, the Grackles, the Pipits, the Water-Thrushes and the Oven-bird. Of these the Oven-bird is easily the most accomplished walker; indeed there is something which approaches the unconsciously comical in the precision of this bird's gait as it promenades on its pretty pink feet

Photo by H. K. Job Courtesy of Outing Pub. Co.

OVEN-BIRD ON HER NEST

over the leaves and along fallen logs. This impression is heightened by its practice of bobbing its tail during its frequent pauses, an operation which is curiously at variance with its otherwise rather over-dignified demeanor. The Water-Thrushes also walk and bob their tails much after the manner of the Oven-bird, which they also resemble in size and coloration; but there are certain distinctive markings by means of which the birds may readily be distinguished, while the Water-Thrushes' decided preference for the banks of streams is not shared by the Oven-bird. The tail-bobbing habit has given the birds the popular name of "Wagtail" (which is inaccurate in so far as it conveys the idea that the movement is a lateral one); but the Water-Thrushes' natural habitat is recognized by the adjective, "water," which qualifies the remainder of the popular designation, while the Oven-bird is known as the Wood Wagtail. The scientific family name of the Oven-bird and the Water-Thrushes, *Seiurus*, means "to wave the tail."

Besides its walking and its tail-bobbing, the bird has other distinctive peculiarities. The most pronounced of these is the architecture of its nest, from which it takes its name. Like most birds which build on the ground, the female, when forced by the near approach of an intruder to leave her nest, flutters away, dragging one wing as if it were broken, this apparently being a deliberate ruse intended to distract attention from the nest. But the nest usually is so cleverly hidden that it is by no means easy to find, even when the observer thinks he sees the precise point at which the bird appeared.

Again, the common song of the Oven-bird at once challenges the attention. It consists of several repetitions of a two-syllabled note uttered rapidly, and in a quick crescendo. Mr. Burroughs translates this utterance into, "Teacher, *Teacher*, TEACHER, TEACHER," and the note does approximate the sound of the word. The bird puts the accent invariably upon the last syllable — as do some New England schoolchildren — so that what he says is, Tea-cher', *Tea-cher'*, and so on, the series often ending with the first syllable alone. This somewhat monotonous chant is metallic and strident rather than musical; but, as Mr. Burroughs says, "Wait till the inspiration of its flight-song is upon it. What a change! Up it goes through the branches of the trees, leaping from limb to limb, faster and faster, till it shoots from the tree-tops fifty or more feet into the air above them, and bursts into an ecstasy of song, rapid, ringing, lyrical; no more like its habitual song than a match is like a rocket; brief but thrilling; emphatic but musical. Having reached its climax of flight and song, the bird closes its wings and drops nearly perpendicularly downward like the Skylark. If its song were more prolonged, it would rival the song of that famous bird. The bird does this many times a day during early June, but oftenest at twilight."

Ornithologists generally agree with Mr. Burroughs that this song is most likely to be heard when the bird is mounting, as he describes, and in the late afternoon or early evening; but at

least one careful and accurate observer, Bradford Torrey, recorded (in *Birds in the Bush*) having heard the bird sing it from a perch, or even on the ground, and as early as 6 o'clock in the morning.

It seems clear now that this remarkable flight-song of the Oven-bird is the one which Thoreau heard so often, but failed to identify with the singer, though he knew the "Golden-crowned Thrush," the name by which the Oven-bird was formerly known. No less than fifteen times (between 1851 and 1860) did he note in his journal hearing this mysterious "night-warbler's" song; and, curiously enough, one entry (for May 16, 1858) begins with, "A golden-crowned thrush hops quite near," and ends with, "Hear the night warbler." So anxious did he become to identify this unseen bird that Emerson, with his gentle irony, warned him to desist trying to find out what it was, lest, should he be successful, he should thereafter lose all interest in life. GEORGE GLADDEN.

LOUISIANA WATER-THRUSH

Seiurus motacilla (*Vieillot*)

A. O. U. Number 670. See Color Plate 9.

Other Names.— Large-billed Water-Thrush; Southern Water-Thrush; Wagtail; Water Wagtail.

General Description.— Length, 6¼ inches. Upper parts, grayish-olive; under parts, white with streaks of grayish-olive. Bill, shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, even or slightly notched.

Color.— ADULTS (SEXES ALIKE): Above, plain grayish-olive, slightly darker on crown; a conspicuous stripe of white over eye, extending from nostril to beyond end of ear region; a triangular loral spot and broad stripe behind eye of dark grayish-olive, the latter sometimes involving greater part of sides of head, the lower portion of which, however, is always paler and streaked with dull whitish; a crescentic mark of white on lower eyelid; cheeks, white, usually flecked with grayish-olive; *under parts white or buffy-white*, becoming cream-buff on flanks and under tail-coverts; chin and throat, immaculate or with only a few minute flecks; chest, sides, and flanks, broadly streaked with grayish-olive, the streaks on front of chest smaller, more distinctly wedge-shaped; under wing-coverts brownish-gray; bill, horn-brownish; iris, brown; legs and feet, pale flesh color.

Nest and Eggs.— NEST: Placed among roots of fallen timber, old logs, or under mossy banks, always near water and always carefully concealed; exterior of mud-covered leaves which form a solid foundation when dry; inner nest of twigs, grass stems, rootlets and skeletonized leaves, lined usually with dead pine needles. EGGS: 4 or 5, rarely 6, white or creamy, thickly marked with chestnut, rufous, and lilac, more heavily toward larger end.

Distribution.— Eastern United States to South America; breeds from southeastern Nebraska, southeastern Minnesota, and the southern parts of Michigan, Ontario, New York, and New England south to northeastern Texas, northern Georgia, and Central South Carolina; winters from northern Mexico to Colombia, the Greater Antilles, Antigua, and the Bahamas; accidental in California.

Courtesy of Am. Mus. Nat. Hist.

LOUISIANA WATER-THRUSH (¼ nat. size)

This Warbler's song is a true voice of the wild

The Louisiana Water-Thrush is one of the comparatively few birds that walk. Like the Oven-bird it also bobs its tail as it proceeds, a peculiarity from which it derives its popular name of Water Wagtail, the "water" being in recognition of its fondness for the banks of running streams. By careless observers the bird is sometimes mistaken for the Spotted Sandpiper (often called the "Tip-up"), because of both birds' habit of bobbing their tails; but their very different appearance should prevent this confusion.

The bird's resemblance to a Thrush begins and ends in its back being of an olive-brown color, while its grayish-white breast is streaked with black. Its manners are totally different from

Photo of habitat group Courtesy of Am. Mus. Nat. Hist.

LOUISIANA WATER-THRUSHES

those of any of the Thrushes, and it is much smaller than the smallest member of this species. Its characteristic movements are very quick and nervous; it is seldom at rest; and its normal timidity is increased during the breeding season, when it is exceedingly wary about approaching its nest (which usually is very cleverly hidden) in the presence of an intruder.

In its striking exuberance and singularly weird and ringing quality, this Warbler's song is a true voice of the wild. The listener whose ear recognizes and whose heart responds to such utterances is thrilled by it. The emotions which it conjures up are perfectly tangible to him, yet it would be difficult to analyze them, and virtually impossible to describe them in words. One appreciative listener speaks of the song as "loud, clear, and exquisitely sweet, beginning with a burst of melody which becomes softer and more delicate until the last notes die away, lost in the ripple of the stream, above which the birds are generally perched." Like the Oven-bird, this Warbler has a flight-song, described by Dr. Chapman as "a thrilling performance which carries the bird above the tree-tops in uncontrollable musical ecstasy."

"This bird frequents wet ground always, but is by no means confined to running streams, since it is a regular inhabitant of more or less stagnant swamps, and is not infrequently found in bushy marshes at some little distance from large woods. It usually nests among the up-turned roots of a prostrate tree, but also hides its nest under the edges of a fallen log or in the sloping bank of a small stream, or even among the tangled roots at the edges of a cut, where a stream has washed away the soil at a bend. In other cases it nests on the ground in an ordinary swamp, placing the nest under the roots of a tree or otherwise hiding it from view." (Barrows.)

A singular feature of its nest-building is the pathway of leaves leading from the nest and forming a doormat sometimes a foot long.

WATER-THRUSH

Seiurus noveboracensis noveboracensis (*Gmelin*)

A. O. U. Number 675 See Color Plate 92

Other Names.— New York Warbler; Small-billed Water-Thrush; Northern Water-Thrush; Wagtail; Water Wagtail; Aquatic Wood Wagtail; Aquatic Thrush; New York Water-Thrush.

General Description.— Length, 5¾ inches. Upper parts, olive; under parts, yellow streaked and spotted with sooty-olive. Bill, shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, even or slightly notched.

Color.— ADULTS (SEXES ALIKE): Above, plain olive;

WILSON'S WARBLER *Wilsonia pusilla pusilla* (Wilson)
FEMALE MALE

MARYLAND YELLOW-THROAT
Geothlypis trichas trichas (Linnaeus)
FEMALE MALE

YELLOW-BREASTED CHAT
Icteria virens virens (Linnaeus)
MALE FEMALE

KENTUCKY WARBLER *Oporornis formosus* (Wilson)
MALE FEMALE

HOODED WARBLER *Wilsonia citrina* (Boddaert)
MALE FEMALE

All ½ nat. size

a broad stripe of buff over eye extending from nostril to sides of neck; a triangular spot of dusky-olive in front of eye, and a broad streak of the same behind eye; a crescentic mark of light buffy on lower eyelid; below eye and sides of head, streaked with olive and yellowish or pale buffy; *broad cheek stripe and under parts, sulphur-yellow*; the chest, sides, and flanks, streaked with dark sooty-olive, the lower throat with shorter wedge-shaped marks, the upper throat usually with small triangular spots or flecks of the same; under tail-coverts with concealed portion extensively olive or grayish-olive; bill, dusky-brown; iris, brown; legs and feet, flesh color.

Nest and Eggs.— Nest: Always carefully concealed in a bed of moss at the base of a stump or tree or alongside moss-covered logs, near water and on or near the ground; constructed of particles of moss and lined with moss stems; frequently a few dead leaves and twigs are intermingled to give it stability, and the foundation is often quite substantial. Eggs: 4 or 5, creamy-white spotted with chestnut and lilac, more heavily around larger end; usually smaller than those of the Louisiana Water-Thrush.

Distribution.— Eastern North America; north to Davis Inlet, Newfoundland, and the shores of Hudson Bay; breeding southward to northern New England, mountains of Pennsylvania and West Virginia (spruce belt), southern Michigan (?), northeastern Illinois; in winter southward throughout West Indies and along eastern coast districts of Central America to Colombia, Venezuela, British Guiana, Brazil (?), Trinidad, and Tobago, and to Swan Island and Old Providence Island, Caribbean Sea; occasional in Bermudas; accidental in southern Greenland.

The Northern Water-Thrush is similar to, but somewhat smaller than, the Louisiana Water-Thrush, from which it may be distinguished by its unspotted throat and the white line over the eye. Like its larger relative, it walks and bobs its tail meanwhile, but, unlike the former, during its migrations it is apt to appear in gardens near houses, and is comparatively tame and trustful. By some observers, the song of this species is considered more musical than that of the Louisiana Water-Thrush, though the effort seems to lack the uncanny quality of the larger bird, and its flight-song is a less elaborate, though pleasing, performance.

Grinnell's Water-Thrush (*Seiurus noveboracensis notabilis*) is found in western North America. It is larger than the Northern Water-Thrush, and the coloration of the upper parts is less olive, and the under parts are usually white with little, if any, yellow tinge.

Photo by A. A. Allen

LOUISIANA WATER-THRUSH
With food for young

KENTUCKY WARBLER

Oporornis formosus (*Wilson*)

A. O. U. Number 677 See Color Plate 98

Other Name.— Kentucky Wagtail.

General Description.— Length, 5¾ inches. Upper parts, olive-green; under parts, yellow. Bill, much shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, much shorter than wing, slightly rounded, the feathers tapering.

Color.— Adult Male: Crown, black, the feathers of crown and back of head (especially the latter) tipped with slate-gray; rest of upper parts, including sides of neck, plain olive-green; outer web of outermost primary, white; a stripe over eye of lemon-yellow; extending from nostrils to just behind the eye, where curving downward and including the rear half, or more, of lower eyelid; lores, below eye (except the yellow on under eyelid), and greater part of sides of head, uniform black, *this black extended along edge of lower throat and forming a triangular patch*; terminal portion of sides of head, olive-green; under parts, clear lemon-yellow, changing on sides and flanks to olive-green; bill, dark brownish; iris, brown; legs and feet, pale flesh color. Adult Female: Similar to the adult male and not always distinguishable, but usually with the gray tips to feathers of crown broader (even those of the forehead being thus marked) and more brownish-gray, and the black patch on sides of head more restricted and less sharply defined; in some (probably

younger) specimens the black of the crown is entirely concealed, and still more rarely there is no black, the whole crown being uniform brownish-gray.

Nest and Eggs.—NEST: Built on ground, in a thicket, in the woods, at the foot of a tree or tussock of weeds; unusually bulky for the size of the bird; constructed of leaves, small twigs, rootlets, and grass and lined with fine rootlets and horse-hair. EGGS: 4 or 5, white speckled with chestnut, umber, and lilac, forming a wreath at large end or evenly distributed.

Distribution.—Eastern United States; breeding from Alabama, Louisiana and Texas, north to southeastern New York, New Jersey, eastern Pennsylvania, Ohio, southern Michigan, southern Wisconsin, Iowa, and eastern Nebraska, west to border of Great Plains (Texas to Nebraska) occurring north (but not breeding?) to southern Connecticut and Long Island; south in winter to Cuba (accidental), Florida Keys (occasional), and through southern Mexico and Central America to northern Colombia.

The Kentucky Warbler is a lover of heavily timbered country, more especially of deciduous forests, where he sings his *turdle, turdle, turdle*, or *peer-ry, peer-ry, peer-ry* much as do the Cardinal and the Carolina Wren. He is a persistent singer giving many hours a day to his musical efforts from the tops of forest trees, and if disturbed while singing will fly to another perch and resume his song.

The nest is built down in the shorter bushes or ranker weeds, or on the ground at the foot of trees. Mr. Dawson says that the easiest way to find it "is to spy upon the female when the nest is a-making." The Kentucky Warbler, like many other ground birds, walks instead of hopping, and bobs his tail in that peculiar manner which has given them the vernacular name of Wagtail—he is the Kentucky Wagtail. Unlike the Oven-bird and the Water-Thrush, his scientific name does not express this characteristic. Instead it means "beautiful autumn bird."

These birds begin to leave early for their winter home. In July many are off by way of Mexico for Colombia, South America.

CONNECTICUT WARBLER

Oporornis agilis (*Wilson*)

A. O. U. Number 678 See Color Plate 99

Other Names.—Bog Black-throat; Tamarack Warbler; Swamp Warbler.

General Description.—Length, 5½ inches. Fore parts, slate; upper parts, olive; under parts, yellow. Bill, much shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, much shorter than wing, slightly rounded, the feathers tapering.

Color.—ADULT MALE: Forehead, crown, and sides of head, uniform slate color, *relieved by a conspicuous and uninterrupted eye-ring of white*; chin, throat, and chest, plain slate-gray, paler on chin and upper throat, deeper (sometimes almost slate color) on chest; rest of under parts, pale yellow, the sides and flanks, light olive-green; upper parts (except forehead and crown), plain olive-green, the outer web of outermost primary edged with whitish; bill, dark brownish; iris, brown; legs and feet, pale flesh color. ADULT FEMALE: Similar to the adult male, but slate color of head replaced by grayish-olive, olive or brownish-olive, that of chin and throat by pale brownish-buffy or dull brownish-white, that of chest by a deeper shade of the same color as chin and throat; olive of upper parts browner.

Nest and Eggs.—NEST: On ground in swampy woods; compactly built, entirely of dried grass in some instances, built of shreds of bark, leaf stems, and grass in other cases, and lined with fine rootlets and hair. EGGS: 4, white, or creamy-white, spotted with black, brown, and lilac, forming a wreath around large end.

Distribution.—Eastern United States and British Provinces; north to Maine, New Hampshire, Vermont, Ontario, Michigan, and Manitoba west to Minnesota and (casually) Colorado, breeding in Ontario (?) Minnesota, and Manitoba; in winter south to Bahamas, Colombia, and upper Amazon valley.

The Connecticut Warbler is a strange rare bird; a walker instead of a hopping bird; a bird that is hard to find even when it is in the neighborhood; a bird which comes north by one route and returns by another, and is almost lost to the world in both breeding and winter feeding seasons. In the spring this Warbler, with the white eye-ring and slate-gray bib, comes up out of the West Indies to Florida, then across to the Mississippi and Ohio valleys, and almost

Courtesy of the New York State Museum

CONNECTICUT WARBLER *Oporornis agilis* (Wilson)
ADULT IMMATURE
Life size

disappears in the forests of northern Michigan, Minnesota, and Manitoba. From the extremely few records of this bird during the breeding season, one might suppose there were but a few dozen pairs in existence, allowing even for those that are really never observed by man. Maybe no one but Ernest T. Seton has ever seen a nest of the Connecticut Warbler. He found a nest and eggs on a mossy mound in a tamarack swamp near Carberry, Manitoba, June 21, 1883.

During the breeding season Connecticut has two songs: one, *beecher*, six times repeated, and the other, *free-chapel, free-chapel, free-chapel, whoit*. Free chapel and Beecher and Connecticut do not seem so inappropriately associated in the same bird, so that his Puritan name is quite proper.

In the late summer, the Connecticut Warblers start for the land of the Puritan and show themselves there much more commonly than elsewhere. They do not go south by way of the Mississippi basin, but following east through the St. Lawrence and Great Lakes basin, reach New England in September. These rare Warblers pass on, most of them, unnoticed through the Atlantic coast States and leave Florida in October. The latest known record of this bird was on October 22d in the northern part of Colombia in South America. From then until April the bird is lost to the world. One year on April 9th the bird was seen at Tonantins, a town of the upper Amazon. The earliest Florida date is only a month later.

L. Nelson Nichols.

MOURNING WARBLER

Oporornis philadelphia (*Wilson*)

A. O. U. Number 679. See Color Plate 100

Other Names.—Black-throated Ground Warbler; Crape Warbler; Mourning Ground Warbler; Philadelphia Warbler.

General Description.—Length, 5½ inches. Upper parts, gray and olive-green; under parts, black and yellow. Bill, much shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, shorter than wing, slightly rounded, the feathers tapering.

Color.—Adult Male: Head and neck, plain slate-gray deepening into slate color on crown and hindneck, and into almost black on lores; chin, throat, and chest, black, the feathers with distinct terminal margins of slate-gray, these sometimes so broad in front and on the sides that the black is mainly concealed, except on chest; rest of under parts, clear canary-yellow, changing to olive-green on sides and flanks; upper parts, except crown and hindneck, uniform olive-green, the outermost primary edged with whitish; bill, brownish-black; iris, brown; legs and feet, pale flesh color. *No white eye-ring in adult male.* Adult Female: Similar to the adult male, but without any black on chin, throat, or chest, which are smoke gray, much paler (sometimes brownish-white) on chin and part of throat; slate color of crown and hindneck duller, tinged with olive; yellow of under parts slightly paler.

Nest and Eggs.—Nest: In swampy ground among weed bunches or old logs, well concealed and very near the earth, or in the uplands in dry cut-over clearings in small bushes one or two feet above ground; composed of dead weeds, some bark strips, and grass and thickly lined with black horse-hair or black rootlets. Eggs: 4 or 5, white, marked around large end with chestnut and lilac and with small spots of former color scattered over remainder of the shell.

Distribution.—Eastern United States and British Provinces; breeding from mountains of West Virginia (spruce belt) and Pennsylvania, New York, higher districts of New England, Michigan, eastern Nebraska (?), and Minnesota, northward at least to northwestern Ontario, and Manitoba, during migration southward through eastern United States in general (as far west as central Texas), and in winter south to Nicaragua, Costa Rica, Colombia, and Ecuador.

The Mourning Warbler is a quiet Thrush-like bird. If he did not sing in the spring, he might be considered not only scarce but very rare. Even as it is there are many people who have never seen the bird, even in the broad area in which it breeds.

In the cool tangles and thickets of northern hillsides ribbed by cooler gullies, and down in the flat valley swamps where brush and small trees abound, that is where the Mourning Warbler breaks forth into song, because his nest is somewhere not far away from the view of poison ivy, deadly nightshade, or skunk cabbage. A little bush in the rank ferns may be the nesting site. The warmer and more settled parts of the wide breeding area are seldom visited by the

Mourning Warbler. He reserves his song, resembling those of both the Oven-bird and the Water-Thrush, for the distant and wilder regions. He sings *tee, te-o, te-o, te-o, we-se,* loud and clear. Often he will sing a half-hour at a time far up in a tree over a desperately mixed tangle down in which the female sits silently on the nest.

Photo by A. A. Allen

MALE MOURNING WARBLER

At his nest among the nettles

In the late summer they begin their southward journey, appearing frequently along hedgerows, fences full of bushes, and by the highways that skirt the edges of tamarack and cedar swamps. The western birds go south, and the eastern birds go southwesterly until they all meet in one migration route, Louisiana and eastern Texas. Then they are off through Mexico to the winter home in Central America, Colombia, and Ecuador.

There is really nothing about this bird to suggest mourning except the cowl. The cowl is a beautiful bluish-slate set off by a black scarf on the breast. The bird is quiet and retiring in manners, never showy but rather cheerful and self-contained. The *philadelphia* in his scientific name suggests the Quaker garb, and the bird suggests the Quaker manner. Alexander Wilson was not far wrong to call him the Philadelphia Warbler. L. NELSON NICHOLS.

MACGILLIVRAY'S WARBLER

Oporornis tolmiei (*J. K. Townsend*)

A. O. U. Number 680

Other Name.— Tolmie's Warbler.

General Description.— Length, 5½ inches. Fore parts, slate; upper parts, olive-green; under parts, yellow. Bill, much shorter than head, slender, tapering gradually to the tip; wings, long and pointed; tail, shorter than wing, slightly rounded, the feathers tapering.

Color.— ADULT MALE: Head and neck, slate color, deepening into black on lores, *a conspicuous spot of white on each eyelid*, smaller on the upper; chin sometimes white; throat and chest, darker slate but the feathers margined with pale gray, never forming a "solid" black patch on chest; upper parts (except crown and hindneck), plain olive-green, duller (sometimes slightly tinged with gray) on back and shoulders; outer web of outermost primary, edged with white; under parts of body, clear lemon-yellow, becoming yellowish olive-green on sides and flanks; bill, dusky-brown; iris, brown; legs and feet, light flesh color. ADULT FEMALE: Crown, hindneck, and sides of head and neck, mouse-gray, fading into pale gray on chin, throat, and chest; a distinct white mark on each eyelid, as in the adult male; rest of plumage as in adult male.

Nest and Eggs.— NEST: In some localities, near ground in clump of grass or bushes, in others, in saplings or juniper trees, from 3 to 6 feet up; made of dried grass and lined with fine grass, a few rootlets, or some horse-hair. EGGS: 3 to 5, usually 4, creamy-white, spotted at large end with dark brown, lilac-gray, and a few pen lines.

Distribution.— Western United States and British Columbia; breeding in mountains from Pacific coast ranges to Rocky Mountains, north to British Columbia (including Vancouver Island), south at least to Arizona, New Mexico, and western Texas; during migrations east to western Nebraska, central Texas, etc.; south in winter to Cape St. Lucas and over whole of Mexico and Central America to Colombia.

W. Leon Dawson, the Ohio ornithologist, insists that Macgillivray's Warbler should be called "Tolmie's Warbler," the ornithological powers-that-be to the contrary notwithstanding, and for the following interesting reasons: The bird was discovered (in 1839) by the American ornithologist Townsend, who named it in honor of Dr. W. T. Tolmie, a friend of his and, later, as a factor of the Hudson Bay Company, of all naturalists and such-like wanderers. But when

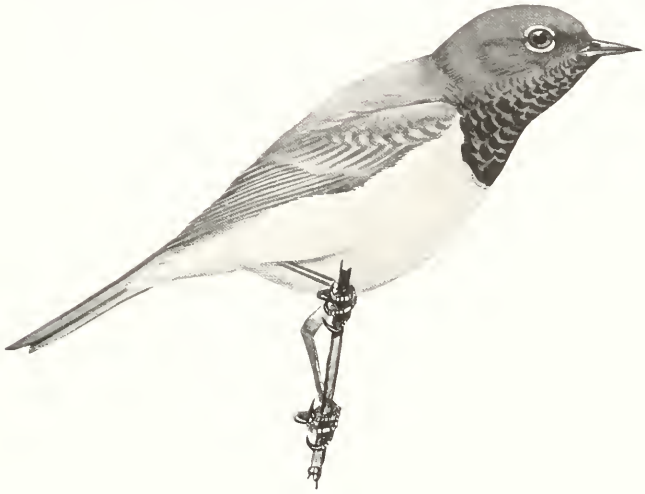
MOURNING WARBLER (*Oporornis philadelphia* (Wilson))

FEMALE MALE

½ nat. size

Townsend died, his collection came into the possession of John James Audubon, who proceeded to give this Warbler the name of Macgillivray, a Scotch naturalist of his acquaintance, who never saw America, much less the bird — alive, at any rate. To this Mr. Dawson objects.

Dr. Coues wrote that he did not remember ever to have seen this Warbler "more than a few feet from the ground, nor elsewhere than in thick brush," and another observer notes its peculiar practice of spending much time actually on the ground, where it scratches industriously among the leaves and searches under dead logs for its insect food. Townsend remarked its sprightly warble, which it delivers with its head and bill raised almost vertically, its little throat swelling with the effort, and Mr. Dawson reduces the syllables of the song to the words, *sheep, sheep, sheep, shear, shear, sheep.* The same observer noted that when the female is flushed from her nest (which is not easy to find), instead of raising an outcry, or attempting to decoy the intruder away, she usually stays near and feeds among the branches with a great show of industry and preoccupation.



Drawing by R. I. Brasher

MACGILLIVRAY'S WARBLER (¾ nat. size)

Most frequently observed in thickets or on the ground

MARYLAND YELLOW-THROAT

Geothlypis trichas trichas (*Linnaeus*)

A. O. U. Number 681. See Color Plate 98

Other Names.— Olive-colored Yellow-throated Wren; Yellow-throat; Western Yellow-throat; Northern Yellow-throat; Northern Maryland Yellow-throat; Black-masked Ground Warbler; Ground Warbler.

General Description.— Length, 4¾ inches. Upper parts, olive-green; under parts, yellow and buffy. Bill, decidedly shorter than head, tapering gradually to the tip; wings, short and much rounded; tail, about the same length as wing and much rounded.

Color.—Adult Male. *Forehead (sometimes including front of crown) and sides of head, uniform black, forming a conspicuous "mask,"* this margined posteriorly by a band of light ash-gray of variable width, sometimes narrow and abruptly defined behind, sometimes covering whole of crown; rest of upper parts, plain dull grayish olive-green, back of head and hinder part of crown tinged with brown; chin, throat, and chest (sometimes breast also), lemon-yellow; under

tail-coverts, paler yellow; rest of under parts, pale buffy, becoming light buffy grayish-brown on sides and flanks; edge of wing, yellow; bill, black; iris, brown; legs and feet, flesh color. ADULT FEMALE: Head without any black or gray; crown, grayish-olive, the forehead or front of crown (sometimes both) tinged with cinnamon-brown; sides of head, similar in color to crown, but paler, especially above and around eye; yellow of under parts, paler and duller than in the male, sometimes distinct only on under tail-coverts; otherwise similar in coloration to the adult male.

Nest and Eggs.— NEST: Placed close to ground but raised clear by a platform of dried grass and leaves, and usually in damp locations and carefully hidden beneath a tussock or patch of briers; large and bulky for size of bird; composed of coarse grass, leaves, rootlets, lined with finer grass, and a few hairs. EGGS: 3 to 5, commonly 4, shiny white, specked and blotched with chestnut, purplish-black, brown, and a few spots of lilac.

Distribution.— Eastern North America; breeds from North Dakota, northern Minnesota, northern Ontario, and southern Labrador south to central Texas, northern parts of the Gulf States, and Virginia; winters from North Carolina and Louisiana to Florida, the Bahamas, Cuba, Jamaica, Guatemala, and Costa Rica.

One who has ears to hear what the birds say is in no danger of remaining long unaware of the existence of the beautiful little Warbler, the Maryland Yellow-throat; for his curiously rhythmical cry of "Witchery, *witchery*, WITCHERY, WITCHERY," with uniformly increasing emphasis, is one of the characteristic wood sounds during the bird's sojourn in its northern range. And the male bird is both picturesque and conspicuous, with his bright yellow waistcoat, and the black mask drawn over his eyes, suggesting the villain, which he most certainly is not. On the contrary, besides being both handsome and amiable, he is one of the most industrious and useful of the useful Warbler family.

Photo by A. A. Allen

MALE MARYLAND YELLOW-THROAT

Approaching his nest and open-mouthed young

The Yellow-throat's movements and manners are characteristic of his kind, which is to say, he is a restless and rather timid bird, and much given to darting about hither and thither. But his timidity is less pronounced than that of many other members of his species which pass their time almost wholly in the tree-tops, thereby taxing the patience — not to say the eyesight — of

MARYLAND YELLOW-THROAT (nat. size)

Courtesy of Am. Mus. Nat. Hist.

the bird-student; for the Yellow-throat does much of his hunting and frolicking in the brush and thickets near enough the ground to make observation of his movements comparatively easy.

Indeed, the bird manifests something like a distinct friendliness for and interest in human beings, provided they keep at what he considers a safe distance. This, however, does not prevent him from spending much of his time in almost inaccessible marshes, and especially such as have heavy cat-tail growths, in which the bird seems very much at home. In drier surroundings he frequently alights on the ground, where he also places his deep cup-shaped nest, and hence his somewhat misleading popular name of "Ground Warbler," which would be fairly accurate if it were applied to the Oven-bird or the Water-Thrushes. Like these birds, and the Yellow-breasted Chat, the Yellow-throat has a flight song, uttered as he flutters a few feet into the air from a tree-top; but it is little more than a confused and brief inarticulate jumble of notes, and hardly deserves to be called a song at all.

The Yellow-throat is one of the birds which is frequently imposed upon by the Cowbird, and seems entirely to lack the discernment of the Yellow Warbler and the Chat in detecting, and their wit in defeating, the parasite's purpose. Indeed, the female Yellow-throat not only incubates the Cowbird's egg, but solicitously feeds the voracious foundling, sometimes to the neglect of her own young, who may in consequence be almost starved or smothered by the ugly interloper. GEORGE GLADDEN.

There are several regional varieties of the Maryland Yellow-throat, north of the Mexican boundary, differing but little from each other either in size or in coloration. The Florida, or Southern, Yellow-throat (*Geothlypis trichas ignota*) is found in the southeastern United States, breeding from the Dismal Swamp in Virginia south to Florida and along the Gulf coast to Louisiana; in the winter it may be found from the coast of South Carolina to southeastern Texas and Cuba. The Western Yellow-throat (*Geothlypis trichas occidentalis*), is distributed over the arid region of the western United States and the provinces of southwestern Canada; it winters south to Cape San Lucas and Tepic, Mexico. The Pacific Yellow-throat (*Geothlypis trichas arizela*) lives in the Pacific coast district, breeding from southern British Columbia to southern California and wintering south to Cape San Lucas. The Salt Marsh Yellow-throat (*Geothlypis trichas sinuosa*) is limited to the salt marshes about San Francisco Bay.

Photo by W. L. Finley and H. T. Bohlman

MALE PACIFIC YELLOW-THROAT FEEDING YOUNG

YELLOW-BREASTED CHAT

Icteria virens virens (*Linnæus*)

A. O. U. Number 683 See Color Plate 98

Other Names.— Chat; Common Chat; Yellow Chat; Yellow Mockingbird; Polyglot Chat.

General Description.— Length, 7½ inches. Upper parts, olive-green; under parts, yellow and white. Bill, much shorter than head, stout, and arched; wing, moderate in length, rounded; tail, as long or longer than wing, rounded, the feathers narrow with rounded tips.

Color.—ADULT MALE: Above, plain grayish olive-green, grayer on upper tail-coverts and (usually) lower rump; a stripe (extending from nostrils to a short distance behind eye), a crescentic mark on lower eyelid, and front part of cheeks, white; lores and around eye (immediately beneath the white mark on lower eyelid), black or dark slaty; sides of head, gray (sometimes tinged with olive-green), with narrower and indistinct paler shaft-streaks; chin, throat, cheeks (except in front), chest, breast, upper abdomen, and *front half or more of sides, rich pure lemon-yellow*, sometimes (in highly plumaged specimens) tinged with orange; flanks, pale gray; rest of under parts, white, the under tail-coverts, sometimes tinged with buff; under wing-coverts, yellow; bill and inside of mouth, black; iris, brown; legs and feet, dusky bluish-gray. ADULT FEMALE: Similar to the adult male, but slightly smaller, and duller in coloration, the black or dark slate of lores and around eye usually replaced by gray, the yellow of under parts usually less pure or deep (that on sides of breast sometimes tinged with olive), the flanks and under tail-coverts more strongly buffy, and the lower bill usually lighter colored.

Photo by H. K. Job Courtesy of Outing Pub. Co.

NEST OF YELLOW-BREASTED CHAT

Fouod amid a dense tangle of briers

Nest and Eggs.— NEST: Built in midst of tangled thickets or briers from 3 to 5 feet up; constructed of dead leaves, strips of bark, dried grass, and weed stalks and lined with fine grasses. EGGS: 3 to 5, usually 4, pure white, tinged with pink when fresh, generally fairly evenly spotted with clearly outlined specks of chestnut and lavender, sometimes coalescing into a wreath around larger end.

Distribution.— Eastern North America; breeds from southern Minnesota, Wisconsin, Michigan, Ontario, Central New York, and southern New England south to southeastern Texas, southern parts of Gulf States, and northern Florida; winters from Pueblo, Vera Cruz, and Yucatan to Costa Rica; casual in Maine.

Few birds appear to possess anything like a sense of humor. Most of them seem to be contented enough, and many act and sing — especially in breeding time — as if they were really happy; but these moods evidently are purely subjective; they do not reveal any capacity to make or to take a joke.

A conspicuous exception to this rule is the Blue Jay, who is a natural born mountebank — if there is such a thing in birdland — and another

Courtesy of Am. Mus. Nat. Hist.

YELLOW-BREASTED CHAT (⅔ nat. size)

Io Tom-Sawyer-like showing off, he has no equal in the American bird-world

is the Yellow-breasted Chat, the largest and withal the most unwarbler-like of all the American Warblers. Unlike the Jay, the Chat doesn't make other birds the butt of his jokes or the object of his ridicule or wrath. Nor has he ever been accused of the cannibalistic and thieving propensities of the Jay. Indeed, his jests and antics seem often to be directly excited by the presence of man, and intended for his amusement. And in Tom-Sawyer-like showing off before humans he has no equal in the world of American birds.

Speaking of his vocal performances, Mr. Burroughs very aptly says that the Cat-bird "is mild and feminine compared with this rollicking polyglot," and then presents the following capital picture of the bird: "Though very shy, and carefully keeping himself screened when you show any disposition to get a better view, he will presently, if you remain quiet, ascend a twig, or hop out on a branch in plain sight, lop his tail, droop his wings, cock his head and become very melodramatic. In less than half a minute he darts into the bushes again, and again tunes up, no Frenchman rolling his *r's* so fluently. *C-r-r-r-r-r,-whrr,-that's it,-chee, quack, cluck,-yit, yit, yit,-now hit it,-tr-r-r,-when,-caw, caw,-cut, cut,-tea-boy,-who, who,-mew, mew,* and so on till you are tired of listening." (*Wake Robin.*) And as an appropriate exit after one of these deliverances, the bird is likely to take himself off in a curious fluttering flight, with his head down and his legs dangling at full length, as though he were trying to make himself as ludicrous as possible.

Like the Oven-bird and the Water-Thrushes the Chat has a flight song which is a voluble and altogether remarkable effort, containing many notes of real beauty. This he delivers as he rises steadily upward, his legs dangling and his head elevated, the rapidly uttered syllables pouring from his throat with astonishing volubility, until he reaches a height twice or more than that of the surrounding trees. Here he pauses and hovers for a few moments on very rapidly moving wings, the song gradually dying away until it ceases, when he drops almost perpendicularly and regains his old or another perch.

It should be recorded also, to the credit of this peculiar bird, that when the Cowbird attempts to make it the victim of its parasitic practice, the mother Chat often destroys the parasite's egg and her own as well. GEORGE GLADDEN.

Photo by A. A. Allen

ONE OF THE SHYEST OF NORTH AMERICAN BIRDS

The only photograph ever secured of a Yellow-breasted Chat on its nest

The Long-tailed Chat (*Icteria virens longicauda*) of the western United States is similar to the Yellow-breasted Chat; but the wing, tail, and bill are longer, the tail always, or nearly always, longer than the wing; the upper parts are more grayish olive-green, usually more nearly gray than olive-green; white of cheek region much more extended, frequently occupying the entire cheek area; yellow of under parts averages deeper.

HOODED WARBLER

Wilsonia citrina (*Boddaert*)

A. O. U. Number 684. See Color Plate 98

Other Names.— Hooded Titmouse; Hooded Fly-catching Warbler; Black-headed Warbler; Mitered Warbler.

General Description.— Length, 5¼ inches. Upper parts, olive-green; face and under parts, yellow. Bill, not over ½ length of head, tapering gradually to the tip; wings, moderately long and pointed; tail, rounded or slightly double rounded.

Color.—Adult Male. Forehead and front of crown, together with lores, sides of head, space around eyes, and cheeks, rich lemon-yellow, the lores sometimes with a little of dusky or black; *rest of head, including throat, together with chest, deep black*, that of the chest with an abruptly defined convex rear outline; hindneck, back, shoulders, lesser wing-coverts, rump, and upper tail-coverts, plain yellowish olive-green, wings and tail, dusky brownish-gray with yellowish olive-green edgings, the middle wing-coverts broadly tipped with that color; inner webs of three outermost tail-feathers extensively white terminally, that on the exterior feathers occupying more than the terminal half; under parts of body, pure rich lemon-yellow, becoming olive-greenish on sides and flanks, the under tail-coverts, paler yellow; under wing coverts, pale yellow; bill, blackish in spring and summer, more brownish in fall and winter; iris, brown; legs and feet, pale flesh color. Adult Female: Similar to the adult male, but with much less of black on head, sometimes with none; if the black occupies approximately the same area as in the male it is much duller and broken with olive-green on crown and back of head and with yellow on throat; usually, the throat is entirely yellow, sometimes with an indication of a dusky collar across the lower portion or on upper chest, and the crown and back of head are blackish only next to the yellow of forehead and sides of head; when there is no black on the head the crown is entirely olive-green, becoming more yellowish on forehead.

Nest and Eggs.—Nest: Generally placed within a foot of ground in bushes; composed of shreds of grape-vine and tree bark, dried leaves, and grass, neatly interwoven and fastened with spiders' webs, and lined with fine grass, horse-hair and a few rootlets. Eggs: 3 to 5, but almost always 4, creamy-white sparingly spotted in wreaths around large end with reddish-brown, purple, and dull lavender.

Distribution.—Eastern United States, west to edge of the Great Plains; breeding northward to Connecticut, southeastern New York (lower Hudson valley), central New York, northeastern Illinois, eastern Nebraska, etc.; southward to South Carolina, Alabama, and Louisiana; occasional northward to Massachusetts, northeastern New York, southern Ontario, southern Michigan, and Wisconsin; in winter south to Cuba and Jamaica and through eastern Mexico and Central America to Panama; casual in the Bermudas.

The black domino of the Maryland Yellow-throat is replaced in the male Hooded Warbler by a broad yellow mask, extending over the forehead to the crown of the head and well back of and below the eyes, this yellow patch being sharply set off by a solid black framework, which forms a sort of cap or hood for the bird's head, and a bib for his throat. These markings are very conspicuous, and, being peculiar to this bird, it may readily be identified by means of them.

Like the Yellow-throat, however, this Warbler is found much in brush or the lower branches of trees, within easy observation range. Under these conditions one may not only enjoy to the full the bird's singularly striking and beautiful plumage, but may see as well many evidences of its natural gentleness and friendliness. Even when flushed from her nest, the female bird flutters about, uttering a mildly protesting chirp and showing her outer white tail-feathers, but without the display of fear and rage commonly expressed by other birds under such conditions.

Dr. Chapman, to whose affections this bird evidently makes a very strong appeal, says of its song: "To my ear, the words *you must come to the woods or you won't see me*, uttered quickly, and made to run one into the other, exactly fit the bird's more prolonged vocal efforts, though they are far from agreeing with the attempts at syllabification of others. The call is a high, sharp *cheep*, easily recognized after it has been learned." (*The Warblers of North America.*) Mrs. Wright's interpretation of the song is *Che-we-co-tsip, tsip, che-we-co.* There appear to be two song-periods, the first ending early in July and the second occupying about the last week of August.

The genus to which this Warbler belongs, and which includes the Wilson's Warbler and its variants and the Canada Warbler, was named *Wilsonia* by Bonaparte in honor of Alexander Wilson, father of American ornithology.

WILSON'S WARBLER

Wilsonia pusilla pusilla (*Wilson*)

A. O. U. Number 685 See Color Plate 98

Other Names.—Wilson's Flycatcher; Wilson's Fly-catching Warbler; Wilson's Black-cap; Wilson's Black-capped Flycatching Warbler; Black-capped Warbler; Black-cap; Black-capped Flycatching Warbler; Green Black-capped Warbler.

General Description.—Length, 4¾ inches. Upper parts, olive-green; under parts, yellow. Bill, not over ½ length of head, tapering gradually to the tip; wings, moderately long and pointed; tail, slightly double rounded.

Color.—Adult Male: Forehead, above and around eye, and entire under parts, lemon-yellow, the sides and flanks slightly tinged with olive-green; *crown, glossy blue-black*, the feathers slightly elongated, distinctly

outlined, rest of upper parts, uniform olive-green; the sides of neck and sides of head, similar but rather more yellowish; primaries and secondaries, purplish-brown edged with olive-green; bill, dark brown; iris, brown; legs and feet, light brownish. ADULT FEMALE: Similar to the adult male and often not distinguishable; usually, however, slightly duller in color, with black crown-patch more restricted or obscured by olive-green margins to the feathers; sometimes the black entirely absent, the whole crown, except forehead, being olive-green, the forehead and above eye, yellow.

Nest and Eggs.— NEST: Imbedded in ground in swampy woods; constructed of swamp grass and lined with fine grass and a few hairs. EGGS: 2 to 4, pure white, wreathed around larger end with markings of cinnamon and lavender-gray.

Distribution.— Eastern North America; breeds from the tree limit in northwestern and central Mackenzie, central Ungava, and Newfoundland south to southern Saskatchewan, northern Minnesota, central Ontario, New Hampshire, Maine, and Nova Scotia; winters in eastern Central America from Guatemala to Costa Rica and occasionally north to Michoacán; migrates mainly along the Alleghenies.

The Wilson Warbler is a decidedly busy and restless Warbler full of individuality and energy. He is a jaunty, tail-twitching flycatcher, getting his food any way from leaf-searching and trunk-peering to darting out into the air in the style of the Tyrant Flycatchers. His home is in the bushes that border the woodlands, or in the undergrowth of thin forests, or anywhere along cool streams, but always in the northern parts of America. South of the international boundary he nests only in certain favorable localities. He sings his quick, bubbling warble as a rule far from the haunts of man, though there are places, Ottawa and elsewhere in Canada, where this Blackcap is at home not far out of town.

The bluish-black cap is a distinctive mark of the bird. Even if one should wonder to which of the Water-Thrushes or other near relatives the song belonged, the first observation of the yellow under parts and black cap makes the identification certain. In the migrations up and back from Central America by way of Mexico and the country west of the Alleghenies, Wilson's Blackcap is pretty uniform in many places, but very uncertain in other localities. But almost never either in migration or breeding is this bird found in the deep woods.

Drawing by R. I. Brasher

WILSON'S WARBLER (nat. size)

A decidedly busy and restless Warbler, full of individuality

The Black-caps extend from the Canadian Maritime Provinces across the continent to the Pacific and on down in the higher mountains of the West nearly to the Mexican boundary. But in the Rockies and on the coast there is a varietal difference. In the Rockies and no farther west than eastern Oregon the Blackcaps are larger birds, richer yellow underneath, and with orange rather than yellow foreheads. This variety is

named the Pileolated Warbler (*Wilsonia pusilla pileolata*). It occurs much nearer the Arctic Sea than does the Wilson and is one of the common birds in many parts of coastal and interior Alaska. On the Pacific coast from British Columbia to southern California the Blackcaps are about the size of the Wilson, but much brighter colored than the Pileolated. Here the variety is named the Golden Pileolated Warbler (*Wilsonia pusilla chryseola*).

CANADA WARBLER

Wilsonia canadensis (*Linnaeus*)

A. O. U. Number 686. See Color Plate 94

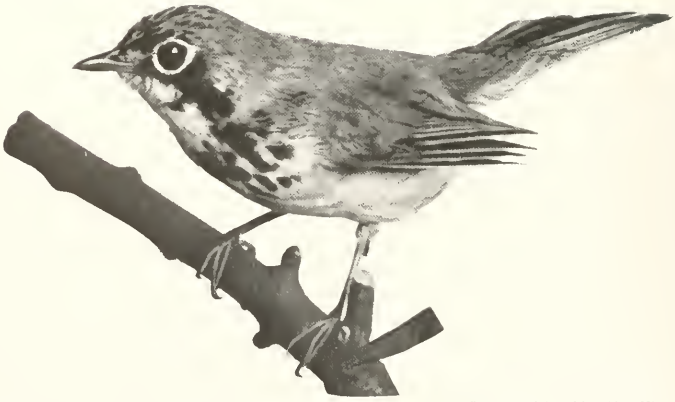
Other Names.— Canadian Warbler; Canada Flycatcher; Canadian Flycatching Warbler; Speckled Canada Warbler; Necklaced Warbler; Spotted Canadian Warbler; Canada Necklace.

General Description.— Length, 5¼ inches. Upper parts, slate-gray; under parts, yellow with a necklace of black spots. Bill, not over ½ length of head, tapering gradually to the tip; wings, moderately long and pointed; tail, slightly double rounded.

Color.—Adult Male: *Forehead and crown, black, the feathers* (except sometimes those on forehead) *margined with gray, producing a scaled appearance;* forehead sometimes with a center line of yellowish — rest of upper parts, sides of neck and rear part of sides of head, plain slate-gray; upper and front part of lores, cheeks, and under parts (except under tail-coverts), lemon-yellow, the outer portion of sides and flanks slightly tinged with olive; under tail-coverts, white, sometimes tinged with yellow toward anal region; *a conspicuous eye-ring of yellowish-white,* more decidedly yellowish on upper portion; loral spot, space below eye, together with front and lower portion of sides of head, black; this continued (sometimes brokenly) along sides of lower neck (between the gray and the yellow) and continued across the chest in a series of spots or streaks; bill, dusky-horn color; iris, brown; legs and feet, pale buffy-brown. Adult Female: Above, including sides of neck and sides of head, plain gray, tinged with olive, especially on back and crown, the latter often showing darker centers to feathers of forehead and crown; upper and front portion of lores and conspicuous eye-ring, pale yellow or yellowish-white; loral spot and below eyes, dusky olive-gray, this sometimes continued behind along lower portion of sides of neck; cheeks and under parts, except under tail-coverts, lemon-yellow (slightly paler and duller than in adult male); under tail-coverts, white; chest, streaked with olive, the streaks sometimes partly black; bill, iris, and feet as in male.

Nest and Eggs.— Nest: Commonly on ground, in tussocks of grass, alongside a log, foot of a bush, in upturned roots of trees, or in cavities of banks near streams or pools of water, usually well concealed; composed of dried leaves, grass, and roots and lined with pine needles, rootlets, and horse-hair. Eggs: 4 or 5, white or buffy-white spotted around larger end with reddish-brown and lilac, sometimes mixed with a few black specks or pen lines.

Distribution.— Eastern North America; breeds from central Alberta, southern Keewatin, northern Ontario, northern Quebec, and Newfoundland south to central Minnesota, central Michigan, southern Ontario, central New York, and Massachusetts, and along Alleghenies to North Carolina and Tennessee; winters in Ecuador and Peru and casually in Guatemala; in migration to eastern Mexico; casual in Colorado.



Courtesy of Am. Mus. Nat. Hist.

CANADA WARBLER (nat. size)

Haunts the shrubbery, wild vines, and thick undergrowth

The Canada Warbler is a particularly interesting bird because of his attractive necklace of black pendants on a yellow breast, and because of his sweet warbling liquid song. The song has been spelled *rup-it-che, rup-it-che, rup-it-chitt-it-lit*, and also *t'le we, t'le we, t'le we, t'le we, t'l it wit*. The bird haunts the shrubbery, wild vines, and bushes of thick undergrowth in very much the same localities as the Wilson Blackcap. Damp and dense coverts are where the nests are found. The Wilsons on the way north hardly leave any pairs south of the Canadian zone. Many pairs of the Canada Necklace, however, drop off to breed, all through the northern States, though the main body of the migrants go on to Canada. The Canada is indeed a near relative of the Hooded and Wilson Warblers, and shows it by its habits. Like them it is a flycatcher, taking much of its food on the wing, although like a true Warbler it also gleans among the leaves.

In the spring and fall migrations this bird is not so exceedingly rare as to call for the same enthusiasm, when found by bird observers, that would follow the finding of a Kirtland Warbler. Yet few observations of the bird are made without a thrill of pleasure because of its comparative rarity and beauty.

REDSTART

Setophaga ruticilla (*Linnæus*)

A. O. U. Number 687 See Color Plate 97

Other Names.—American Redstart; Redstart Warbler; Redstart Flycatcher; Fire-tail; Yellow-tailed Warbler.

General Description.—Length, 5¾ inches. MALE: Fore and upper parts, black; under parts, white; patches of reddish-orange and white. FEMALE: Upper parts, gray and olive-green; under parts, white; patches of yellow and white. Bill, about ½ length of head, much depressed, its profile wedge-shaped; wings, rather long and pointed; tail, shorter than wing, decidedly rounded, the feathers broad.

Color.—ADULT MALE: Head, neck, chest, and upper parts, uniform black, with decided bluish gloss, except on wings and tail; *basal portion of wing-quills (except two innermost wing-quills) and more than basal half of tail-feathers except two (sometimes only one) middle pairs, pale orange*, this occupying the full width of both webs; a large patch on each side of chest and breast, and under wing-coverts, orange-red; rest of under parts, white, usually with black between the orange-red lateral patches and the white in middle of breast; longer under tail-coverts, sometimes partly black or dusky; bill, black in spring and summer, more brownish in fall and winter; iris, brown; legs and feet, blackish. ADULT FEMALE: Very different from the adult male. Crown and hindneck, plain mouse-gray; back, shoulders, and rump, grayish olive-green; upper tail-coverts, middle tail-feathers, terminal portion of others, dusky; wings, dusky (not so dark as dusky portion of tail) with light olive edgings; basal portion of wing- and tail-feathers (except one or two middle pairs and two innermost secondaries), light yellow, that on the wings more restricted than the orange-red in the male, often not showing at all on primaries; sides of head, paler gray than crown, especially the lores and region over eye; cheeks, chin, throat, and chest, dull grayish-white; rest of under parts, more decidedly white, *with a conspicuous patch of yellow on each side of chest and breast*, the center portion of breast, together with sides and flanks, sometimes tinged with yellow; bill, dark brown or brownish-black in summer, pale brown in winter; iris, legs, and feet as in adult male.

Nest and Eggs.—NEST: A compact, cup-shaped structure placed in fork of sapling or bush, usually within 15 feet of the ground; composed of plant fibers, strips of bark, and grass, neatly lashed together with spiders' webs, and lined with fine grasses and hair. EGGS: Usually 4, rarely 5, quite variable in coloration; ground color white to greenish or grayish-white, marked with specks and spots of cinnamon-brown or lilac, generally wreathed around larger end.

Distribution.—North America and northern South America; breeds from central British Columbia, west central Mackenzie, southern Keewatin, northern Quebec, and Newfoundland to Washington, northern Utah, Colorado, central Oklahoma, Arkansas, and North Carolina; rarely breeds in the southeastern United States south of latitude 35°; casual in migration in Oregon, California, Lower California, Arizona, and northern Ungava; winters in West Indies and from central Mexico to Ecuador and British Guiana.

The Redstart is not only one of the most conspicuously colored of the Warblers, but is perhaps the most restless and active of this essentially nervous and fidgety family. It is no exaggeration to say that the male bird is almost never still while he is awake, and that the female is motionless only when she is incubating. Not content with incessant hopping, skipping, and fluttering from limb to bough and from bough to twig in its ceaseless search for larvæ and bugs of all kinds, the bird frequently darts off into space, or down to the ground, or against a tree-

trunk to snap up an insect which its sharp eyes have detected. These lightning-like sallies may account for its pretty habit of keeping its tail spread and its wings half open and vibrating slightly even as it dances along a limb.

Photo by H. K. Job

FEMALE REDSTART ON HER NEST

"Anyone familiar with the woods in summer," says Mr. Parkhurst, "will recognize in this the fiery little Redstart — a name corrupted from 'redstert,' meaning red tail, this portion of the plumage being doubly noticeable from the amount of reddish-yellow upon it, and from the bird's habit of keeping it partly spread as it moves from limb to limb. The wings and sides of the breast also have a dash of flame color, intensified by the otherwise lustrous black of the male, whereas the female — well, she looks as anyone would be supposed to look, arrayed in goods warranted not to wash. If the male Redstart is a fiery coal, the female is a trail of ashes in his wake." (*The Birds' Calendar.*)

Unlike the Blackburnian Warbler, his rival in color, whose happy hunting ground is the treetops where he is hard to find and harder to follow, the Redstart shows a decided partiality for shrubbery and low-hanging foliage near dwellings, wherefore he is much the more frequently and plainly seen of the two. Indeed, either his confidence or his concentration on his work often causes him to dart down and snatch an insect from the ground at the very feet of the astonished and delighted observer.

Like the vocal efforts of most of the Warblers, the song of the Redstart is a lisping and rather unmusical effort, composed generally of the rapid reiteration of syllables like *wee* and *see* or *zee*. In fact, the bird seems to be altogether too busy to sing a real song.

PAINTED REDSTART

Setophaga picta *Swainson*

A. O. U. Number 688

General Description.— Length, 5¼ inches. Fore and upper parts, black; under parts, red; patches of white. Bill, about ½ length of head, much depressed, its profile wedge-shaped; wings, rather long and pointed; tail, shorter than wing, decidedly rounded, the feathers broad and rounded.

Color.— ADULTS (SEXES ALIKE): Head, neck, upper chest, sides, back, shoulders, lesser wing-coverts, rump, and upper tail-coverts, uniform deep black, with a faint bluish gloss; wings and tail, black, the former relieved by a large white patch involving the middle and greater coverts and edges of innermost secondaries, the latter with three outermost feathers extensively white terminally, this white occupying much the greater part of the outermost feather; lower chest, breast, and abdomen, rich vermilion or poppy-red, rarely more orange-red; under tail-coverts, black or blackish broadly tipped with white; under wing-coverts, mostly white; bill, legs, and feet, black; iris, brown. YOUNG, FIRST PLUMAGE: Above, plain sooty-black; the wings and tail as in adults, but the white wing-patch tinged with buff; beneath, sooty-grayish passing into dull whitish on center of abdomen; the breast spotted or broadly streaked with sooty-blackish.

Nest and Eggs.— NEST: In cavities under banks or beneath projecting stones; loosely constructed of grasses and vegetable bark and lined with horse-hair. EGGS: 4, pearly-white, thickly dotted with chestnut and lavender.

Distribution.— Higher mountains of central and southern Arizona, and New Mexico, and southward over higher districts of Mexico.

As far as its characteristic movements are concerned, the Painted Redstart might as well be the common Redstart of the Eastern States. For, according to Mr. Henshaw, like that bird his western cousin dances about with his wings and tail half spread, flits nervously from tree to tree, dashing out occasionally to snap up an insect on the wing, seldom stays in the same tree more than a few minutes, and often clings to the side of a tree trunk long enough to dig a grub out of the bark.

The striking red, white, and black plumage of the adult birds makes them very conspicuous in the dense green foliage of the live oaks and conifers which they frequent. They seem to be fond of water and are often found near cascades and spring holes. They may also be seen hopping about on mossy banks and stumps of large trees.

WAGTAILS AND PIPITS

Order *Passeres;* suborder *Oscines;* family *Motacillidæ*

THE Wagtails and the Pipits are *Oscines* or song birds, with the bill slender, notched, and cone-shaped; bristles at the corners of the mouth obvious but only two conspicuously developed; the wing rather long and pointed; the tail variable in relative length but never conspicuously shorter than the wing, usually nearly as long, sometimes longer; the tip even, slightly notched, double notched, rounded, or double-rounded; the tail-feathers rather narrow, usually tapering terminally, but never (except sometimes the middle pair) pointed at the tip; the tarsus slender, always much longer than bill, toes slender, the middle one distinctly longer than the other forward toes; hind toes about equal in length to outer and inner toes or slightly longer, but stouter: claws slender, variable in relative length, that of the hind toe (except in one species) elongated and but slightly equal to or exceeding the toe in length.

The family comprises birds of terrestrial habits, which walk or run gracefully on the ground, instead of hopping, and feed upon insects. The Wagtails are usually of black, gray, and white plumage, but sometimes are partially bright yellow — always unstreaked. The Pipits are of streaked plumage, with brownish or tawny tints prevailing, in which they present a remarkable resemblance to the Larks, as they also do in their habits and the character of their nests and eggs. The family is most developed in the eastern hemisphere, to which the Wagtails are restricted (though one subspecies breeds in the Arctic zone of western Alaska). America possesses only the Pipits represented by about eight species and only two of these eight are found north of the Rio Grande.

PIPIT

Anthus rubescens (*Tunstall*)

A. O. U. Number 697 See Color Plate 69

Other Names.—American Pipit; American Titlark; Prairie Titlark; Hudsonian Wagtail; Brown Lark; Louisiana Lark; Red Lark.

General Description.—Length, 6½ inches. Upper parts, grayish-olive; under parts, pinkish-buff with streaks of dusky.

Color.—ADULTS IN SPRING AND SUMMER: *Above, grayish-olive* or hair-brown, the feathers of crown, back, and shoulders, darker centrally, forming indistinct streaks; wings and tail, dusky with pale grayish-olive or olive-grayish edgings, the middle wing-coverts margined terminally with pale grayish-buffy, dull grayish, or dull whitish, the greater coverts also sometimes margined at tips with the same; *outermost tail-feathers with outer web and shaft, except at base, and nearly the terminal half of inner web, white;* second tail-

feather with a terminal white space, third sometimes also with a small wedge-shaped mark of white at tip; a stripe over the eyes and the *entire under parts, varying from pinkish-buff to deep cinnamon-buff* or wine-colored buffy cinnamon; the chest, sides, and flanks usually streaked with dusky; bill, dusky-brown; iris, brown; legs and feet, black or brownish black. ADULTS IN WINTER: Similar to the spring and summer plumage, but general color of upper parts much browner or more greenish-gray; the stripe over the eye and the under parts much paler, the streaks heavier.

Nest and Eggs.—NEST: On ground; bulky but compact, made of dried grass and moss. EGGS: 4 to 6, dark chocolate-colored, overlaid with numerous spots and streaks of grayish-brown.

Distribution.—The whole of North America, breeding from Newfoundland, Province of Quebec, high mountains of Colorado and the Sierra Nevada (above timber line, 13,000 feet and upward) northward, including the Shumagin and Aleutian islands, Alaska, and northeastern Siberia; Greenland (breeding); in winter southward over whole of United States and greater part of Mexico to highlands of Guatemala, and to Bermudas.

The American Pipit confines itself to open country entirely, showing a marked preference for wet fields and bogs, especially such as are frequented by Wilson's Snipe. In autumn it is often seen, however, on comparatively dry plowed ground as well as in upland pastures and stubble fields. Usually it occurs in scattered flocks, from a dozen to fifty individuals being distributed over a space of a dozen acres, and when one is started several take flight; but even when fifty are on the wing they never collect into a solid flock, but fly in extended order. When feeding the birds run about rapidly on the ground, very much like Sandpipers, and tilt and flirt the tail much like the Water-Thrushes and some shore birds. When flushed they rise very quickly to a considerable height, mounting by great leaps with their powerful wings, and constantly uttering their sharp double-syllabled call which gives the bird its name of "Pipit." We do not recall ever seeing one alight on a bush or tree and they seldom make use of a wire or fence-post.

Drawing by R. I. Brasher

PIPIT (⅔ nat. size)

A sweet-voiced wanderer from the mountain tops and the subarctic regions

The food appears to consist mainly of worms, insects and such other animal food as can be found in damp places, freely mixed with seeds of various kinds. The bird certainly does no harm and presumably does much good to the agriculturist, but its stay is so short and its numbers in any one locality so small that it probably is not an economic factor of any great importance.

WALTER BRADFORD BARROWS, in *Michigan Bird Life*.

SPRAGUE'S PIPIT

Anthus spraguei (*Audubon*)

A. O. U. Number 700

Other Names.—Missouri Skylark; Prairie Skylark.

General Description.—Length, $6\frac{1}{4}$ inches. Upper parts, grayish-brown, streaked with dusky; under parts, buffy-white, streaked with black.

Color.—ADULTS IN SPRING: Above, pale buffy grayish-brown broadly streaked with dusky, the streaks broadest on back, narrowest on hindneck; wings and tail, dusky with pale buffy grayish-brown edgings, the middle and greater wing-coverts margined terminally with the same, the outermost primary edged with white; *outermost tail-feathers, white*, with basal half, or more, of inner portion of inner web dusky-grayish; next tail-feather with approximately the outer half white, the inner half grayish-dusky; sides of head, including a stripe over the eyes, and the lores, and the entire under parts, dull buffy-white, becoming brownish-buffy on chest, sides, and flanks, the chest narrowly streaked with blackish, the sides of breast more broadly but less distinctly streaked with grayish-brown; under wing-coverts, white; bill, dusky-brown or brownish-black; iris, brown; legs and feet, pale buffy-brown. ADULTS IN AUTUMN AND WINTER: Similar to the spring plumage, but more pronounced buffy, both above and below; lower throat, chest, breast, sides, and flanks, rather deep dull buff, with dusky streaks on chest rather broader and less sharply defined than in spring.

Nest and Eggs.—NEST: Like that of the American Pipit. EGGS: 4 or 5, pale purplish-buffy or buffy-white, thickly spotted with purplish-brown.

Distribution.—Interior plains of North America; breeding from eastern Montana and northern North Dakota to Assiniboia and the Saskatchewan district of Manitoba; in winter southward to Texas and southern Louisiana, and through eastern Mexico to Vera Cruz and Puebla; occasional in winter on coast of South Carolina.

It does not seem very polite to call a family of birds Wagtails just because they have the habit of jerking their tails as they go about. But that is the name they go by in the books, and we have two of them in the United States. We call them Pipits or Titlarks.

The best known is Sprague's Pipit, called the Missouri Skylark, or sometimes the Prairie Skylark. This bird gets the name of Skylark because he sings while soaring about in the air far over our heads.

The Pipits live on the ground, and walk and run, not hop. As they go, they bob their heads, and jerk their tails. They are a little larger than an English Sparrow, and they go in flocks. They are never seen in the woods, but in open pastures or plains, or beside a road.

Sprague's Pipit is all in streaks of brown and gray, and lighter below. He has a large foot, which shows that he lives on the ground, and a very long claw on the hind toe.

The nest of the Pipit is made by hollowing out a little place in the ground and lining it with fine grasses. Though on the ground it is one of the hardest to find, because it is lightly covered with the dry grasses, and when the bird is sitting, she matches the grasses so well that one can hardly see her, even when looking right at her.

The birds eat insects and weed seeds, and go about in flocks. Even then they are hard to see, because when they are startled they do not flutter or fly, but crouch or squat at once, and stay perfectly still.

This bird is noted, as I said, for his song. It is said to be as fine as that of the English Skylark of which we hear so much. Perhaps his way of singing makes it still more interesting. He starts up on wing, flies a little one way, then the other, all the time going higher and higher. So he climbs on up, up, up, in a zigzag way, till he is fairly out of sight, all the time giving a wonderfully sweet song. It is not very loud, but of such a kind that it is heard when the bird is far out of sight. When he can no longer be seen, one may still follow him with a good field-glass. He will sing without stopping for fifteen or twenty minutes.

Then suddenly he stops, closes his wings, and comes head first toward the ground. It seems as if he would dash his brains out against the earth, but just before he touches he opens his wings and alights like a feather, almost where he started from. He should be as famous as the English bird, and will be no doubt, when he is better known.

OLIVE THORNE MILLER.

DIPPERS

Order *Passeres;* suborder *Oscines;* family *Cinclidæ*

THE distribution of the family of Dippers (*Cinclidæ*) is restricted to Europe and temperate Asia, western North America, and thence southward through the Andes Mountains to the southern part of South America. There are some twelve or fourteen species, six of which are found in America, but only one north of Mexico.

In coloration, plain gray or brown predominates; and this is never relieved by conspicuous markings, such as bars, though parts of the plumage sometimes have darker margins to the feathers which produces an appearance of scales. Some species have the throat and breast, the crown, or part of the back, white. The sexes are alike in color, but the young are paler below than the adults.

The bill is much shorter than the head, slender, much compressed, and the tip rather abruptly curved downward. The wing is short, very concave beneath, with the tip comparatively long and stiff. The tail is decidedly more than half as long as the wing, and even, or slightly rounded, and with the feathers broad and rounded at the tip. The head, neck, and body are covered with down, and the plumage is very dense and soft.

These birds are found only in mountainous or hilly districts, where they frequent the swift, rocky streams in which they find their food of water insects and fish spawn. They are at ease in the water, under which they propel themselves by motion of their wings. Their nest, a structure of moss, is usually placed behind or near a waterfall, and is kept green by the spray which constantly moistens it.

The Dippers are song birds (*Oscines*). Apparently they are allied to both the Thrushes and the Wrens, perhaps more nearly to the latter to whom they bear a closer resemblance in their abbreviated form, though they differ in the more pointed wing as well as in other details. In their aquatic habits and their covering of down they differ from all other perching birds, and for this reason they are often thought of as shore birds.

DIPPER

Cinclus mexicanus unicolor *Bonaparte*

A. O. U. Number 701

Other Names.—Water Ouzel; American Water Ouzel; American Dipper.

General Description.—Length, 8 inches. Slate-color.

Color.—Head and neck, plain gray-brown, darker on the crown, paler on chin and throat; rest of plumage (except larger wing-coverts, wings, and tail-feathers), plain dull slate color, the under parts, slightly paler and more brownish, gradually merging forward into the brown of foreneck; greater wing-coverts, primary coverts, wings, and tail-feathers, dull blackish-slate or dusky margined with slate color; greater under wing-coverts, longer under tail-coverts, and (at least in more early spring specimens) feathers of lower abdomen and flanks, margined terminally with whitish; bill, black; iris, brown; legs and feet, horn-brownish.

Nest and Eggs.—NEST: In a crevice of rocks or among roots of trees, always placed near running water, often where spray keeps the outside damp, and sometimes behind a cascade; a beautiful sphere of soft green moss about seven inches in diameter, sometimes dome-shaped, deeper than wide, with a small round entrance and strongly arched and braced with leaves, grass, and twigs, cemented with mud. EGGS: 3 to 5, plain, pure white.

Distribution.—Mountains of western North America, from Rocky Mountains (including Black Hills of South Dakota) to the Pacific coast, and from the Mexican boundary (western Texas to southern California), and northern Lower California to northern Alaska. (Resident throughout, even in Alaskan localities.)

There is only one member of this family in the United States and that one lives in the Rocky Mountains and the mountains of California.

The body of the Dipper is about as big as a Robin's, but looks much smaller, because his very short tail gives him a "chunky" look. His

wings are short and rounded, and his plumage is very soft and so thick that he can go under water without getting wet. He is slate color all over, a little paler on the breast, and his mate is exactly like him, but the young Ouzel has all the under feathers tipped with white, and usually a white throat. Both old and young have shining white eyelids which show very plainly among their dark feathers.

The Dipper is a water lover. The nest is placed close to it, generally near a waterfall, sometimes even behind a waterfall, where he has to go through a curtain of falling water to reach it. It is on a shelf of rock, and shaped like a little hut, with a hole on one side for a door. It is made of soft green moss, which is kept alive and growing by constant sprinkling. Sometimes the waterfall itself keeps it wet, but the birds have been seen to sprinkle it themselves. They do it by diving into the water, then going to the top of the nest and shaking themselves violently.

This bird is a curious fellow. His food is the small insects which live under water, and he is as much at home there as other birds are in the air. He can walk on the bottom with swift running water over his head, and he can really fly under water, using his wings as he does in the air. I have seen him do it.

The Water Ouzel cares nothing for the cold. On cold mornings when all other birds sit humped up with feathers puffed out over their feet to keep warm, he is as jolly and lively as ever. He flies about in the snow, dives under the ice, and comes out at an airhole, and sings as if it were summer weather.

Mr. John Muir, who knows so well the western mountains and the creatures who live there, has told us much of what we know about this bird. He says the Ouzel sings all winter, and never minds the weather; also that he never goes far from the stream. If he flies away, he flies close over the brook, and follows all its windings and never goes "across lots."

When the young Ouzel is out of the nest and wants to be fed, he stands on a rock and "dips," that is, bends his knees and drops, then stands up straight again. He looks very droll.

Drawing by R. Bruce Horsfall

DIPPER (¼ nat. size)

It flies well under water or in the air

Dr. Merriam tells a story which shows how fond the Dipper is of water, especially of a sprinkle, and explains why he always chooses to live by a waterfall. The Doctor was camping out on the bank of a stream where one of these birds lived, and one morning he threw some water out of a cup. Instantly the bird flew into the little shower as if he liked it. To see if he really wanted to get into the water, the Doctor threw out some more. Again the bird flew into it, and as long as he would throw out water, the Ouzel would dash in for his sprinkle.

Olive Thorne Miller.

MIMIC THRUSHES

Order *Passeres;* suborder *Oscines;* family *Mimidæ*

THIS exclusively American group, in habits and general appearance resembling the true Thrushes and Wrens, are all songsters of greater or less merit. Many of them are preëminent as vocalists, while some of the genus *Mimus* are the most brilliant and remarkable vocalists of all birds. This applies especially to the Mockingbirds, though several of the Thrashers are singers of only a little less versatility and charm.

Speaking generally, the members of the family have slender bills, exceedingly variable in shape and relative length, sometimes only half as long, sometimes longer, than the head; usually slightly decurved terminally, sometimes conspicuously so; often straight or very nearly so. The wing is variable as to relative length, but is always more or less rounded, and the tail is also variable, but is never distinctly shorter than the distance from the bend of the wing to the tip of the longest secondaries; usually about as long as the wing or sometimes much longer, always more or less rounded.

This family is now considered scientifically distinct from both the Wrens and the true Thrushes. The Mockingbirds seem to be most nearly related to the Thrushes and evidently occupy an intermediate place between them and the Wrens. Externally the Mockingbirds differ from the Thrushes in their shorter, more rounded wings, and in various anatomical details. The family is most numerously represented, both as to genera and species, in Mexico. Only two of the fourteen genera occur in South America, which has but one genus not found elsewhere. Altogether about fifty species and sub-species and fourteen genera are found.

In coloration the Thrashers have the upper parts plain rufous, brown, or gray, with or without whitish wing bands; under parts buff, whitish, pale brownish, or pale grayish, with or without darker streaks or spots; the lateral tail-feathers with or without white or whitish tips. They build nests open above, composed of twigs and the like, lined with fine rootlets or similar materials, placed in dense (often thorny) shrubs, small trees, or vine-growths, sometimes in brush piles or on ground. The eggs (from 3 to 5) are usually speckled, sometimes plain light greenish-blue.

The Mockingbirds are gray or grayish-brown above, with or without darker streaks, the wings with two whitish or pale grayish bands and whitish or pale grayish edgings, the lateral tail-feathers with more or less white; under parts dull whitish, with or without streaks on flanks. The young have the breast conspicuously speckled or spotted with dusky. As far as is known the nest of the Mockingbird is open above, rather bulky, and is placed in dense shrubs, small trees, or thick vine-growth. The eggs (from 3 to 5) are pale greenish or whitish, speckled or spotted with brown.

SAGE THRASHER

Oreoscoptes montanus (*J. K. Townsend*)

A. O. U. Number 702

Other Name.— Sage Thrush.

General Description.— Length, 8 inches. Upper parts, grayish-brown; under parts, buffy-white, with dark streaks. Bill, much shorter than head and slender; wings, long and pointed; tail, shorter than wing, slightly rounded.

Color.—Above, light grayish-brown, with very indistinct streaks; wings and tail, darker grayish-brown, with pale grayish-brown edgings; middle and greater wing-coverts, narrowly tipped with dull white, producing two narrow bands; outermost primaries, narrowly edged with white; inner webs of three or *four outermost tail-feathers tipped with white*, this about three-fourths of an inch in extent on lateral feathers, greatly

Courtesy of the New York State Museum

MOCKINGBIRD *Mimus polyglottos polyglottos* (Linnaeus)
BROWN THRASHER *Toxostoma rufum* (Linnaeus)
CATBIRD *Dumetella carolinensis* (Linnaeus)
All ½ nat. size

decreasing in extent toward middle feathers; an indistinct line of dull whitish over eye; lores, light grayish; speck below the eyes and the sides of head, light grayish-brown, narrowly streaked with dull whitish; cheeks and under parts, dull buffy-white passing into pale cinnamon-buff on flanks, anal region, and under tail-coverts; throat, bordered along each side by a narrow stripe, or series of streaks of dusky or black; lower throat, with sparse wedge-shaped small spots or streaks of dusky; chest, breast, sides, and flanks conspicuously streaked with dark grayish-brown or sooty, the markings on chest in form of wedge-shaped spots rather than streaks; under wing-coverts, pale grayish-buff; bill, dusky; iris, lemon-yellow.

Nest and Eggs.—NEST: In low bushes, especially sage and cactus, from one to three feet above ground; rough, bulky structure of coarse plant stems, dry sage bark, coarse grasses, and twigs, lined with fine stems and rootlets. EGGS: 3 to 5, with a ground color of rich greenish-blue spotted with bright reddish-brown and a few lead-colored spots.

Distribution.—Arid plains, mesas, and foothills of western United States; breeds from the western border of the Great Plains, in western North Dakota, South Dakota, Nebraska, Kansas, and Texas to the eastern base of the Sierra Nevada and Cascade ranges; north to Montana, Idaho, and eastern British Columbia; winters from southern California and mountains of central Texas to northern Mexico and Cape San Lucas, casually to Guadalupe Island.

On the sagebrush plains, or the ragged desert mountains of the West, the Sage Thrasher makes its home. It resembles nothing so much as a young undersized Mockingbird. But for its spotted breast one might easily mistake it for this famous and better known songster. In the early spring, when the snows on the distant mountains are beginning to melt and the long wary ranks of wildfowl are passing northward overhead, the song of this Thrasher rings far and wide over the sandy wastes. One seldom sees it far from the ground. Perched on a sagebush or a thorny cactus it sings and calls and keeps a lookout for mate or rival. More frequently, perhaps, it is found on the ground, running about among the clumps of bushes. It seems to be equally at home about ranches or far out on the uninhabited deserts. I have met them on the plains when, far as the eye could reach, there was no sign of human habitation, and again have watched them running about the streets of an adobe Indian village, pausing at intervals to raise their wings playfully, glance around, and then resume their travels. The substantial nests of sticks, twigs, and grasses are usually placed in bushes near the ground. The Sage Thrasher appears to be confined very largely to the open countries of the far West.

T. GILBERT PEARSON.

Drawing by R. I. Brasher

SAGE THRASHER (¼ nat. size)

A fine daylight and moonlight singer of the western deserts

MOCKINGBIRD

Mimus polyglottos polyglottos (*Linnæus*)

A. O. U. Number 703 See Color Plate 101

Other Names.—Mock Bird; Mocking Thrush; Mimic Thrush; Mocker.

General Description.—Length, 10 inches. Upper parts, brownish-gray; under parts, white and gray. Bill, shorter than head; wings, long and rounded; tail, longer than wing, rounded, the feathers moderately broad with rounded tips.

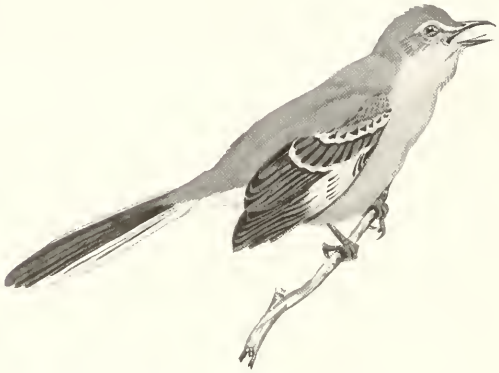
Color.—*Above, plain brownish-gray;* wings and tail, dull blackish-slate with pale slate-gray edgings, these broadest on secondaries (especially the terminal portion, where sometimes inclining to white); middle and greater wing-coverts, narrowly tipped with dull white or grayish-white, forming two narrow bands (these indistinct in worn plumage); primary coverts, white, usually with a subterminal spot or streak of dusky; base of primaries, white, this most extended on the two innermost, where occupying at least basal half of both webs, often much more, that on the longer quills sometimes entirely concealed by overlying primary coverts; outermost tail-feather, white, sometimes with a trace of

dusky or grayish on outer web; second, with outer web mostly blackish, the inner web mostly white; third, blackish or dusky, with about half of the terminal and basal portions white; a very indistinct stripe over eye of pale gray; eyelids, grayish-white; lores, dusky; sides of head, grayish, indistinctly streaked with whitish; space below the eyes and cheeks, dull white, usually faintly barred or transversely flecked with grayish or dusky; chin and throat, dull white, margined along each side by a dusky streak; *chest and sides of breast, pale smoke-gray,* passing into a more buffy hue on sides and flanks, the under tail-coverts, pale buff; abdomen and center of breast, white; bill, black.

Nest and Eggs.— NEST: Composed of twigs, grasses and weeds, lined with fine rootlets, moss, and sometimes cotton; placed in many different locations but usually in a deep bramble thicket, or hedge; as a rule they are located within ten feet of the ground, never on it, and have been seen built fifty feet above the earth. EGGS: 4 to 6, bluish-green heavily freckled with several shades of brown.

Distribution.— Eastern United States; northward, regularly (but locally), to Maryland, southern Ohio, southern half of Indiana and Illinois, Missouri, etc., irregularly to Massachusetts, southeastern New York (Long Island, etc.), New Jersey, Pennsylvania, northern Indiana and Illinois, and Iowa, sporadically to Maine, Ontario, southern Wisconsin (breeding), and southern Minnesota; breeding and resident throughout its range, except where occurring accidentally; southward to southern Florida and along the Gulf to eastern Texas, and to the Bahamas; introduced into Bermuda (1893).

The Mockingbird stands unrivaled. He is the king of song. This is a trite saying, but how much it really means can be known only to those who have heard this most gifted singer uncaged and at his best in the lowlands of the Southern States. He equals and even excels the whole feathered choir. He improves upon most of the notes that he reproduces, adding also to his varied repertoire the crowing of chanticleer, the cackling of the hen, the barking of the house dog, the squeaking of the unoiled wheelbarrow, the postman's whistle, the plaints of young chickens and turkeys and those of young wild birds, not neglecting to mimic those of his own offspring. He even imitates man's musical inventions. Elizabeth and Joseph Grinnell assert that a Mockingbird was attracted to a graphophone on the lawn where, apparently, he listened and took mental notes of the performance, giving the next day, a week later, or at midnight an entertainment of his own and then repeating it with the exact graphophone ring. Even the notes of the piano have been reproduced in some cases and the bird's vocalization simulates the lightning changes of the kaleidoscope.



Drawing by R. I. Brasher

MOCKINGBIRD (½ nat. size)

In improvization or mimicry, the most versatile and brilliant of American bird vocalists

The Mocker is more or less a buffoon, but those who look upon him only as an imitator or clown have much to learn of his wonderful originality. His own song is heard at its best at the height of the love season, when the singer flutters into the air from some tall tree-top and improvises his music, pouring out all the power and energy of his being in such an ecstasy of song that, exhausting his strength in the su-

preme effort, he slowly floats on quivering, beating pinions down through the bloom-covered branches until, his fervor spent, he sinks to the ground below. His expanded wings and tail flashing with white in the sunlight and the buoyancy of his action appeal to the eye as his music captivates the ear. On moonlit nights at this season the inspired singer launches himself far into the air, filling the silvery spaces of the night with the exquisite swells and trills, liquid and sweet, of his unparalleled melody. The song rises and falls as the powers of the singer wax and wane, and so he serenades his mate throughout the live-long night. One such singer wins others to emulation and, as the chorus grows, little birds of the field and orchard wake just enough to join briefly in the swelling tide of avian melody.

The Mockingbird seldom holds himself aloof from mankind, but often makes himself at home in the door-yard, sits on the chimney top and, like the Robin in the North, "knows all the folks." The negroes close the shutters of their cabins at night, but they say that the Mocker "sings down the chimney." Often the nest is placed in shrub or hedge close by the house, and as soon as the young are hatched the parents take pains to proclaim their whereabouts that all may know. Therefore, the young, which are in demand as cage birds, frequently are taken and sold into captivity.

The Mockingbird has many traits that endear it to all. It is brave and devoted, attacking birds twice its size, dogs, cats, and even man himself in defense of its young. Its cries of alarm give warning to all other birds nearby. When kindly treated it may even come in at the door or window. Thus it has won for itself a high place in the regard and affection of the Southern people. EDWARD HOWE FORBUSH.

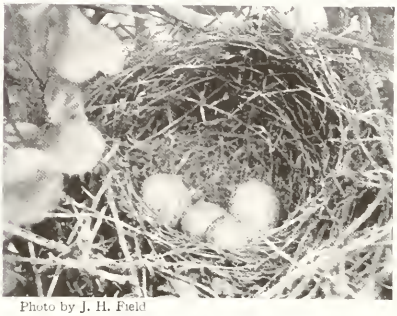


Photo by J. H. Field

NEST OF MOCKINGBIRD

Often it is placed in shrub or hedge near the house

The Western Mockingbird (*Mimus polyglottos leucopterus*) is just a paler, larger, and more buffy edition of its eastern congener. Throughout its range through southwestern United States and northern Mexico it exhibits the same traits that have won for the species a scientific name which translated means "many-tongued mimic."

CATBIRD

Dumetella carolinensis (*Linnæus*)

A. O. U. Number 704 See Color Plate 101

Other Names.— Chicken Bird; Cat Flycatcher; Slate-colored Mockingbird; Black-capped Thrush.

General Description.— Length, 8¾ inches. Plumage, slate-gray with black on crown, wings, and tail. Bill, much shorter than head, nearly straight to near tip, where gradually curved downward; wings, moderately long and rounded; tail, slightly longer than wing, decidedly rounded, the feathers narrowly rounded terminally.

Color.— Crown, black, or slate-black, the forehead slate-gray, rear of crown or nape, sometimes more sooty; tail, black, the feathers edged with slate-gray basally; wings, slate-black with broad slate-gray edgings (nearly concealing the darker color); *under tail-coverts, chestnut;* rest of plumage, plain slate-gray, the upper surface darker, or more nearly slate color; bill, black; iris, brown.

Nest and Eggs.— NEST: Rather bulky, made of dry leaves, twigs, roots, and grasses, lined with fine rootlets and grass; placed in bushes, trees or thickets usually within 10 feet of the ground. EGGS: 4 to 6, rarely latter number, plain, deep bluish-green, much darker colored than the Robin's.

Distribution.— Temperate North America in general, but wanting in most of region south of the Columbia River and west of Rocky Mountains; north to Nova Scotia, southern Maine, New Hampshire, Ontario, Manitoba, Saskatchewan, and British Columbia; west to and including Rocky Mountains, in Montana, Idaho, Wyoming, Colorado, New Mexico, and Utah, and in Oregon and Washington to the Pacific coast (accidentally to Farallon Islands, California); breeding southward to northern Florida and along Gulf coast to east-central Texas; wintering from Southern States (occasionally Middle States) southward to Bahamas, West Indies, and through eastern Mexico and Central America to Panama; resident in Bermuda; accidental in Europe.

There is more of the cat about the Catbird than his cat-like call, if birds may be trusted to know their enemies and to treat them accordingly. For, especially during the nesting season, his feathered neighbors are often seen mobbing him with every show of anger and hatred; and, what is more, he acts as if he knew he deserved it. That is, when he is set upon by a pack of Robins, Sparrows, and Bluebirds, and ordered to be gone, he goes, and stands not on the order of his going. Furthermore, besides his most unbird-like snarl, his manners are often distinctly feline, and his habit of slinking through the bushes in which small birds have nests is decidedly suspicious. In short, he is accused of being a nest-robber, and it seems more than likely that the charge can be substantiated. Mr. Burroughs, indeed, says he has "seen him do it."

All this is a great pity, for the Catbird is a distinct personality in bird land, and withal an interesting, if a somewhat pert one. He seems to be very well aware that he is an accomplished and versatile vocalist; in fact, no American bird displays more plainly a desire to "show off." Witness his posing and attitudinizing when he establishes himself atop a bush, where he apparently desires to be the observed of all observers. Then his self-consciousness and his vanity are both apparent and amusing.

As a singer, the Catbird may be ranked third in the remarkably gifted Mimic-Thrush trio, of which the Mockingbird is easily first and the Brown Thrasher a good second. Attentive listeners probably will agree that there is a fundamental resemblance between the songs of these birds, in that each is a prolonged effort, lacking anything like definite construction or consistent rhythm — a mere jumble of notes, varying greatly in volume as well as tonal character, and many of them either actually imitative, or at least reminiscent of the calls or parts of the songs of other birds.

Courtesy of Am. Mus. Nat. Hist.

CATBIRD (⅔ nat. size)

He is a distinct personality in bird land

The Catbird is given third rank in this trio because his song is likely to include harsh notes of various kinds — some of them imitative — whereas the percentage of such tones is negligible or altogether absent from the characteristic songs of the Thrasher and the Mocker. Somebody has said that the Catbird "sings Chinese," which is rather clever, since there is a certain resemblance between his erratic potpourri and the queer half-musical, half-guttural ups and downs of the Celestial's speech. Despite the foregoing comparisons and comments the Catbird's song is

not an unmusical or inferior performance. On the contrary, it is undoubtedly one of the most interesting of bird utterances, and usually contains many melodious phrases as well as piquant musical flourishes. In it one may hear reproduced the characteristic tones of the flute, piccolo, and clarionet, as well as the violin and even the higher tones of the cello. Other birds' notes, or fragments of their songs, which are more or less perfectly reproduced are those of the Wood Thrush, the Robin, the Song Sparrow, the House Wren, the Oriole, and even the Whip-poor-will. With these, as Mr. Mathews says, "the yowl of the cat is thrown in any where, the guttural remarks of the frog are repeated without the slightest deference to good taste or appropriateness, and the harsh squawk of the old hen, or the chirp of the lost chicken, is always added in some malapropos manner. All is grist which comes to the Catbird's musical mill, and all is ground out according to the bird's own way of thinking."

Reports from the Mississippi valley indicate that the Catbird is sometimes a serious annoyance to fruit growers. The reason for such reports may possibly be found in the fact that on the prairies fruit-bearing shrubs, which afford so large a part of this bird's food, are conspicuously absent. With the settlement of this region came an extensive planting of orchards, vineyards, and small fruit gardens, which furnish shelter and nesting sites for the Catbird as well as for other species. There is in consequence a large increase in the numbers of the birds, but no corresponding gain in the supply of native fruits upon which they were accustomed to feed. Under these circumstances what is more natural than for the birds to turn to cultivated fruits for their food? The remedy is obvious: cultivated fruits can be protected by the simple expedient of planting the wild species which are preferred by the birds. Some experiments with Catbirds in captivity show that the Russian mulberry is preferred to any cultivated fruit.

The stomachs of 645 Catbirds were examined and found to contain 44 per cent. of animal (insect) and 56 per cent. of vegetable food. Ants, beetles, caterpillars, and grasshoppers constitute three-fourths of the animal food, the remainder being made up of bugs, miscellaneous insects, and spiders. One-third of the vegetable food consists of cultivated fruits or those which may be cultivated, as strawberries, raspberries, and blackberries; but while we debit the bird

Photo by R. I. Brasher

NEST AND EGGS OF CATBIRD

with the whole of this, it is probable — and in the eastern and well-wooded part of the country almost certain — that a large part is obtained from wild vines. The rest of the vegetable matter is mostly wild fruit, as cherries, dogwood, sour gum, elderberries, greenbrier, spiceberries, black alder, sumac and poison ivy. Although the Catbird sometimes does considerable harm by destroying small fruit, it cannot on the whole be considered injurious. On the contrary, in most parts of the country it does far more good than harm.

BROWN THRASHER

Toxostoma rufum (*Linnæus*)

A. O. U. Number 705 See Color Plate 101

Other Names.— Thrasher; Brown Thrush; Red Thrush; Fox-colored Thrush; Sandy Mocker; Sandy Mockingbird; French Mockingbird; Brown Mocker; Brown Mockingbird; Ground Thrush; Mavis; Red Mavis; Song Thrush.

General Description.— Length, 11 inches. Upper parts, brown; under parts, buffy, streaked with dark. Bill, about length of head, curved downward at the end; wings, rather short and rounded; tail, decidedly longer than wing and rounded.

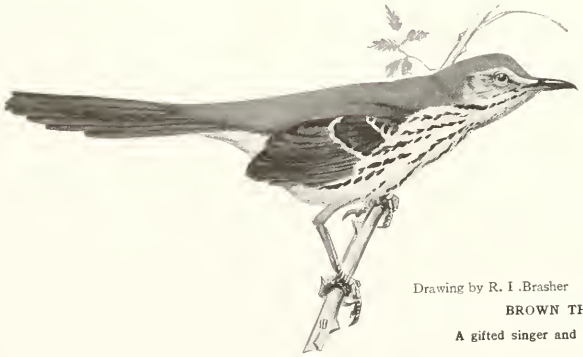
Color.—*Above, plain dull cinnamon-rufous,* becoming paler over eye and on notched terminal portion of outer webs of primaries; middle and greater wing-coverts tipped with white (spring and summer) or pale buff (autumn and winter), producing two distinct bands across wing, each white or buffy band immediately preceded by a narrower and less distinct one of dusky; outermost tail-feathers indistinctly tipped with buff (worn away in summer plumage); sides of head, light rusty-brown, narrowly streaked with dull whitish; cheeks, dull white, usually flecked with brown or dusky, especially on rear portion; under parts, pale buff, approaching buffy-white on chin, throat, and abdomen (entirely buff in fresh autumnal and early winter plumage), the chest, sides, and flanks broadly streaked with brown or dusky, the streaks smaller and narrowly wedge-shaped on upper chest, broader on sides of breast, longer flanks; throat margined along each side by a series of blackish streaks, forming a stripe; bill, dusky; iris, bright lemon or sulphur-yellow.

Nest and Eggs.—NEST: In clusters of thorny vines, within a few feet of the ground, sometimes on it, occasionally in trees, seldom in open situations, out-of-the-way, quiet localities being preferred; a rather flat, loosely constructed structure exteriorly composed of twigs, rootlets, leaves, hair, together with some feathers. EGGS: 3 to 5, varying from pale greenish-white to pale buff, profusely speckled with minute spots of reddish-brown, evenly over entire surface, more rarely forming a wreath around larger end.

Distribution.—Eastern United States and southeastern Canada; northward to southern Maine, Vermont, New York, northern Ontario, Manitoba and Saskatchewan; breeding southward to northern Florida, Alabama, Mississippi, and eastern Texas, westward to base of Rocky Mountains in Montana, Wyoming, and Colorado; wintering from North Carolina, southeastern Missouri, etc. (more rarely farther northward) to southern Florida and south-central Texas; accidental in Arizona and Europe.

The term "thrush," which is frequently applied to this bird, is another of the many misnomers in popular ornithological terminology, as the bird is not a "thrush" at all, but a member of a totally different family, called *Mimidæ*. In point of fact, about the only resemblance between the Thrashers and other birds commonly called Thrushes is that all show more or less brown in their plumage and have speckled breasts. Right there the outward similarity may be said to end; for certainly in their general form and size (not to mention their habits) there is a wide difference between the smaller Thrushes, with their comparatively short tails and small, plump bodies, and the long-tailed, long-billed and relatively slender Thrashers.

The term "Thrasher" probably is due to the bird's vigorous twitching about of his long tail, a performance which is characteristic especially when he is nervous or angry, and with which he is likely to emphasize certain notes of his song. The movement is also suggestive — to a sufficiently fertile imagination — of the flail in the primitive method of thrashing grain. Another explanation — humorous, of course — comes from Mr. Job, who says: "I used to wonder why the bird was called a Thrasher. But after I had actually received a real thrashing from a



Drawing by R. I. Brasher

BROWN THRASHER (⅓ nat. size)

A gifted singer and a brave defender of his home

pair of them, I thought I had some light on the subject." And he then proceeds to describe the courage displayed by this pair in their desperate attacks upon him while he was photographing their nest and young. This is a strongly marked characteristic of the bird, and must excite the admiration of every one who has seen it expressed; for the male bird, especially, is often positively heroic in his persistent efforts to protect his family. Indeed, it behooves the intruder under such conditions to guard his head carefully, for the infuriated bird will often dash directly at one's face, and a single stroke from that long, curved bill, if fairly delivered, undoubtedly would destroy the sight of an eye.

The song of this Thrasher is fairly one of the most musical and delightful of American bird utterances. In its structure — or rather, the lack of any definite structure — it suggests the Catbird's, though it includes almost none of the harsh or nasal notes which often mar that singer's effort. Most of the tones composing the song are like those of the flute or the piccolo, though the violin and the clarionet are also represented. The spirit, also, of the two utterances differs in that the Catbird's is likely to include little phrases which are *sotto voce* in quality, and in the manner of their delivery, as if the singer were addressing them in a personal way to a single listener; whereas the Thrasher's aria, delivered usually from a conspicuous perch at the top of a tree or bush (and most frequently in the morning or the evening), seems to be addressed to all the world within hearing.

Browning, of course, had a different bird in mind, yet he might well have been thinking of our Thrasher's pretty trick of repeating a phrase, when he wrote, in his beautiful poem, "Home Thoughts from Abroad"—

> That's the wise Thrush; he sings his song twice over
> Lest you should think he never could recapture
> That first fine careless rapture.

Of the Thrasher's impassioned manner when the frenzy is upon him, we have this fine picture from Mr. Cheney: "As the fervor increases his long and elegant tail droops; all his feathers separate; his whole plumage lifted, it floats, trembles; his head is raised and his bill is wide open; there is no mistake; it is the power of the god. No pen can report him now; we must wait until the frenzy passes." And now he reminds one of Emma Juch, when she would throw back her head and pour her whole soul into the musical setting of Heinrich Heine's perfect poem, "*Du bist wie eine blume*,"

The lighter and more rollicking significance of the song is cleverly suggested by the following lines in Mrs. Wright's book, *Citizen Bird*, and attributed to "Olive":

> My creamy breast is speckled
> (Perhaps you'd call it freckled)
> Black and brown.
>
> My pliant russet tail
> Beats like a frantic flail,
> Up and down.
>
> In the top branch of a tree
> You may chance to glance at me,
> When I sing.
>
> But I'm very, very shy,
> When I silently float by,
> On the wing.
>
> Whew there! Hi there! Such a clatter.
> What's the matter — what's the matter?
> Really, really?
>
> Digging, delving, raking, sowing,
> Corn is sprouting, corn is growing.
> Plant it, plant it!
> Gather it, gather it!
> Thresh it, thresh it!
> Hide it, hide it, do!
> (I see it — and you.)
> Oh! I'm that famous scratcher,
> H-a-r-p-o-r-h-y-n-c-h-u-s r-u-f-u-s —
> Thrasher[1]
> Cloaked in brown."

GEORGE GLADDEN.

The food of the Brown Thrasher consists of both fruit and insects. An examination of 636 stomachs showed 36 per cent. of vegetable and 64 of animal food, practically all insects, and mostly taken in spring before fruit was ripe. Half the insects were beetles and the remainder chiefly grasshoppers, caterpillars, bugs, and spiders. A few predacious beetles were eaten, but on the whole the work of the species as an insect destroyer may be considered beneficial. Eight per cent. of its food is made up of fruits like raspberries and currants which are or may be cultivated, but the raspberries at least are as likely to belong to wild as to cultivated varieties. Grain, made up mostly of scattered kernels of oats and corn, is merely a trifle, amounting to only 3 per cent. Though some of the corn may be taken from newly planted fields, it is amply paid for by the destruction of May beetles which are eaten at the same time. The rest of the food consists of wild fruit or seeds. Taken all

[1] *Harporhynchus rufus* was the scientific name before the adoption of the present one by the American Ornithologists' Union.

in all, the Brown Thrasher is a useful bird, and probably does as good work in its secluded retreats as it would about the garden, for the swamps and groves are no doubt the breeding grounds of many insects that migrate thence to attack the crops of the farmer.

Photo by H. K. Job Courtesy of Outing Pub. Co.

MALE BROWN THRASHER

Shielding young from the hot sun

Sennett's Thrasher (*Toxostoma longirostre sennetti*) is similar to the Brown Thrasher, but larger, with the brown of the upper parts less red and more golden and the under parts whiter. It is a bird of northeastern Mexico, the Rio Grande valley, and the Gulf coast district of Texas. In the same part of the United States, but distributed over more territory in Mexico, is the Curve-billed Thrasher (*Toxostoma curvirostre curvirostre*). His upper parts are plain brownish gray (clay-color), tail, blackish with four feathers on each side abruptly tipped with white; his under parts are buffy-white, deepening into pale brownish-buff on the flanks and lower regions and with the chest, breast, and upper abdomen spotted with pale brownish-gray.

BENDIRE'S THRASHER

Toxostoma bendirei (*Coues*)

A. O. U. Number 708

General Description.— Length, 9¼ inches. Upper parts, grayish-brown; under parts, buffy-white with streaks of dark. Bill, about length of head, curved downward at the end; wings, rather short and rounded; tail, decidedly longer than wing and rounded.

Color.— *Above, plain light grayish-brown*, the rump and upper tail-coverts, paler, the wings and tail, slightly darker; middle and greater wing-coverts, indistinctly tipped with paler, and wing quills narrowly edged with the same; inner web of exterior tail-feathers rather broadly tipped with dull white, the outer web much more narrowly tipped with the same — the remaining tail-feathers (except middle pair) similarly tipped with whitish, but to a less extent, gradually disappearing toward middle feathers; sides of head, similar in color to upper parts but paler over the eyes and on lores, and around the ears narrowly streaked with dull whitish; cheeks and under parts, dull buffy-white, passing into decided brownish-buff on flanks, anal region, and lower tail-coverts; chest (sometimes sides of lower throat also) with sharply defined small wedge-shaped streaks of grayish-brown, the breast more sparsely marked with more roundish spots of a paler grayish-brown, the flanks sometimes indistinctly streaked with the same; sides of throat, margined with a series of wedge-shaped streaks or small spots of grayish-brown; under wing-coverts, light buffy wood-brown; bill, dusky horn-color; iris, yellow.

Nest and Eggs.— NEST: In the desert trees and bushes, but the customary site is in the cholla cactus about three feet from the ground; small and daintily built in contrast to the nests of others of the genus; composed exteriorly of the regulation sticks, twigs, and grasses and lined with soft materials — wool, feathers, horsehair, fine rootlets, and grasses. EGGS: 3 or 4, generally greenish-white, sometimes grayish or pinkish-white, spotted usually most thickly around larger end with reddish-brown, lavender-gray, and drab.

Distribution.— Desert districts of Arizona, and southeastern California (Colorado Desert) and northern Mexico; winters in Mexico; accidental in Colorado.

While at Tucson, Arizona, one of the first problems of identifying birds of the cactus was to distinguish Bendire's Thrasher from Palmer's Thrasher (*Toxostoma curvirostre palmeri*). From any manual of identification, you will find that the birds look almost exactly alike, except Bendire's Thrasher is a trifle smaller, and its bill is a little shorter than that of Palmer's. But, with these slight differences, it is practically impossible to tell one bird from the other. I soon discovered a difference, however, when I began examining the nests of the two birds. Palmer's Thrasher builds a large bulky nest and, about Tucson, it is found almost entirely in the cholla cactus. The lower part of the nest is made of rough sticks with a lining of fine grasses. The

eggs are the size of a Robin's, with blue background uniformly peppered with brown dots. Of some twenty nests examined, all were practically the same.

The nest of the Bendire's Thrasher I found to be a smaller structure and often lined with horsehair, string and fine grasses. The cup of the nest is distinctly smaller than that of Palmer's. The eggs are also smaller. They have a light blue background, but are marked with larger brown blotches, generally more around the larger end. In appearance, the egg is more like that of the Mockingbird or Russet-backed Thrush.

While Bradford Torrey was at Tucson, he experienced considerable difficulty in recognizing Palmer's and Bendire's in the field. He fell back on an old method which he used in distinguishing the Downy from the Hairy Woodpecker, where the dress is alike, but the size is slightly different. It was easier to carry in mind the measurements of the two birds' bills than the comparative measurements of the two birds themselves. So with this point continually in mind and after spending considerable time in the field, he was able by the aid of his glass to tell one bird from the other almost beyond mistake. WILLIAM L. FINLEY.

CALIFORNIA THRASHER

Toxostoma redivivum (*Gambel*)

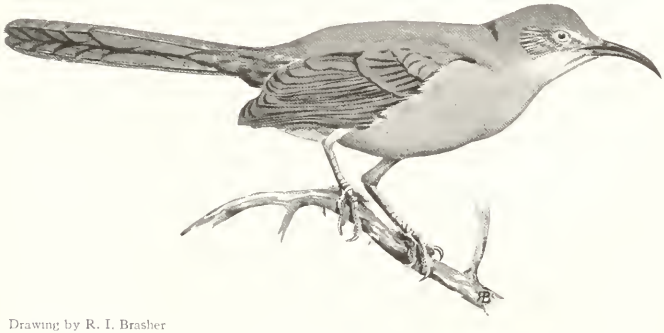
A. O. U. Number 710

General Description.— Length, 11½ inches. Upper parts, grayish-brown; under parts, buff, grayish-brown, and cinnamon. Bill, about length of head, curved downward at the end; wings, rather short and rounded; tail, decidedly longer than wing and rounded.

Color.— *Above, plain deep grayish-brown*, the upper tail-coverts and tail more decidedly brown (approaching sepia); primaries narrowly edged with paler grayish-brown, and larger wing-coverts usually margined at tip with the same; an indistinct stripe over eye of pale grayish-buff; sides of head and space below the eyes, dusky grayish-brown, narrowly but conspicuously streaked with dull buffy-whitish; cheeks, pale grayish-buff flecked with dusky; *chin and throat, pale buff*, margined along each side by an indistinct (often obsolete) dusky streak; chest, sides of breast, and sides, pale grayish-brown, becoming browner on flanks; center of breast and upper abdomen, pale buff becoming deeper cinnamon-buff on lower abdomen *and passing into cinnamon on under tail-coverts*; bill, blackish; iris, brown.

Nest and Eggs.— NEST: A rough, coarse, shallow platform of sticks, coarse grasses, and moss, with slight depression but always well hidden in the low scrub. EGGS: 2 to 4, usually 3, light greenish-blue with clove-brown, russet, or chestnut spots.

Distribution.— Coast and interior valleys of California and northern Lower California; northward to Shasta County, southward to San Quentin Bay, San Fernando, and San Pedro Martir Mountains.



Drawing by R. I. Brasher

CALIFORNIA THRASHER (¼ nat. size)

A fine singer, clever mimic, and all 'round good fellow

This Thrasher seems to have more to say than any other member of his notably loquacious and voluble family. "Perched on top of the highest bush in sight," says Mrs. Bailey, "he shouts out *kick-it-now, kick-it-now, shut-up, shut-up, dor-o-thy, dor-o-thy*, and then with a rapid change of mood, drawls out, *whoa-now, whoa-now*."

Earlier ornithologists did not credit this Thrasher with any imitative faculty, and some went so far as to declare flatly that the bird never reproduced any other bird's note. But John J. Williams is of another mind; for he identifies in the Thrasher's medley the notes of the California Jay, the Valley Quail, the Slender-billed Nuthatch, the Red-shafted Flicker, the Western Robin and the Wren-Tit, who is often tricked into answering the imitation. The entire performance, moreover, suggests the utmost good nature, as if the singer was enjoying intensely his own efforts.

His long, slender and decurved bill this bird puts to good use, for he employs it very dexterously in clearing away leaves and loose grass in order to get at the bare earth, instead of scratching with his feet, as do the Sparrows and Chewinks. Once the earth is cleared, the Thrasher probes into it to the full length of his bill, after the manner of the Woodcock. He is likely to make two or three of these holes in succession, and then watch each one and snap up any insect which comes to the surface through these shafts.

In the defense of their nest a pair of these Thrashers are likely to act very much as do the Brown Thrashers, of the eastern States. That is, they show the same anger and boldness which the eastern bird displays, even to the extent of dashing up to the intruder and striking at him with their bills. In fact, in these attacks the western bird is the more dangerous of the two, because he is more skillful in the use of his long and almost needle-pointed bill, with which he could easily destroy the sight of an eye, or even inflict an ugly flesh wound on the face, either or both of which injuries the birds undoubtedly are entirely willing to inflict.

LECONTE'S THRASHER

Toxostoma lecontei lecontei *Lawrence*

A. O. U. Number 711

General Description.— Length, 11½ inches. Upper parts, grayish-brown; under parts, dull white and buffy-grayish. Bill, about length of head, curved downward at the end; wings, rather short and rounded: tail, decidedly longer than wing and rounded.

Color.— *Above, plain pale grayish-brown*, the primaries edged with still paler; middle tail-feathers, slightly darker grayish-brown; other tail-feathers, deep grayish-brown, the exterior ones broadly tipped with pale grayish-brown; sides of head, pale grayish-brown, narrowly streaked with whitish and dusky; cheeks whitish, transversely mottled or barred with dusky; chin, throat, breast, and upper abdomen, dull white, margined laterally by a streak of dusky below the cheeks; rest of under parts, very pale buffy-grayish, *passing into deep buff on hinder flanks, anal region, and under tail-coverts*, the lower abdomen and front flanks tinged with buff; bill, blackish; iris, reddish-brown.

Nest and Eggs.— Nest: Usually built in the center of a cholla cactus or mesquite bush; a remarkable, bulky, loose, and deep affair, easily detected from a considerable distance; composed of thorny twigs, dried weeds and stems and grasses, lined with finer material and feathers. Eggs: 2 to 4, pale greenish-blue, minutely but sparsely spotted with shades of reddish or yellowish-brown and lavender.

Distribution.— Deserts of southwestern Utah (west of Beaverdam Mountains), southern Nevada (Vegas, Pahrump, and Indian Spring valleys), southern California and Arizona south to San Felipe Bay, Lower California, and Cape Lobos, Sonora.

It is a pity that this fine bird does not select a habitat more habitable for man, who, in order to hear its beautiful song and observe its interesting ways, must go to the Gehenna-like deserts of the Southwest, where the temperature is often 120° in the shade — with no shade. One may easily believe that the rather bleached appearance of this Thrasher's plumage may be due to the savage heat, which, however, seems to have little effect upon the bird's disposition. To be sure, for two or three hours during the middle of the day, when the heat is at its worst, the bird is likely to be silent and to lurk in such cover as there is; but even when the sun is making con-

ditions almost unendurable for human beings the Thrasher may be both seen and heard.

The bird's distinguishing physical characteristics are its remarkable speed and skill in running, and its willingness to trust to its legs, rather than to its wings, to take it out of danger. In this peculiarity it is excelled only by the famous Road-runner. The Thrasher will easily keep ahead of a rapidly trotting horse, and if winged by a shot is pretty likely to escape from a man on foot; for, besides its speed, it can dodge with the quickness of a cat, and it is very clever at taking advantage of any cover. When forced actually to take to its wings, it is likely to fly low through the brush, keeping out of plain sight until it makes a Shrike-like sweep upward to the top of a bush, whence it can see its pursuer.

Though the song includes more metallic and fewer liquid notes than that of the Mockingbird, which it otherwise resembles somewhat, it is a very beautiful effort. The notes are astonishingly loud and resonant, and almost the entire song may sometimes be heard at a distance of nearly a mile. In the dead of night, when the desert lies in tomb-like silence under the wonderfully brilliant stars, the nocturne of this great singer is one of the most beautiful and inspiring of Nature's utterances.

CRISSAL THRASHER

Toxostoma crissale *Henry*

A. O. U. Number 712

General Description.— Length, 12 inches. Upper parts, grayish-brown; under parts, white, grayish-brown, and reddish. Bill, about length of head, curved downward at the end; wings, rather short and rounded; tail, decidedly longer than wing and rounded.

Color.— Above, plain grayish-brown, the tail slightly darker, tipped with paler and more buffy-brown; under parts, similar but paler and slightly more buffy, passing into dull white on throat and chin and into *cinnamon-rufous on rear flanks, anal region, and under tail-coverts*; region below eye and forward part of sides of head, dull whitish, the feathers margined with dusky; rear of same, light grayish-brown streaked with whitish; cheeks, dull whitish, the feathers sometimes narrowly tipped with dusky; chin and throat, margined laterally by a distinct narrow stripe of dusky; bill, dull black, and long and greatly curved; iris, brown.

Nest and Eggs.— Nest: In bushes near ground; large, loosely constructed of coarse twigs, lined with vegetable fibers, coarse grass, small twigs, and a few rootlets. Eggs: Usually 3, plain pale bluish-green.

Distribution.— Deserts of southwestern United States and Mexico; breeds from southern Nevada and southern Utah south to northern Lower California, and Mexico and from southeastern California to western Texas.

The Crissal Thrasher may, as a rule, be distinguished from Bendire's and Palmer's Thrashers by its long, curved bill and the whitish color of the throat bordered by a darker streak. This bird gets its name from the under tail-coverts, which are a rich chestnut color.

Different species of birds sometimes hold to a type locality, so that even if dress or song are somewhat alike, one may get a very fair indication of the bird itself from the place where it hunts and lives. While around Tucson, I found the Crissal Thrasher very shy, yet my experience was that it almost always stayed along the creek or river bottoms in the thick brush. The other Thrashers about Tucson, Bendire's and Palmer's, as a rule were seen out in the open desert living in the cactus.

I got another indication of the shyness of the Crissal Thrasher in trying to get a photograph of the bird at the nest. We succeeded in getting pictures of the nest and eggs and the young birds, but even though we hid the camera in a very careful way nearby, we could never get either of the parents to come close enough for a snap. The eggs are easily distinguished from those of the two other Thrashers mentioned above, because they are pale bluish-green without spots.

William L. Finley.

WRENS

Order *Passeres;* suborder *Oscines;* family *Troglodytidæ*

IN the *Troglodytidæ* or Wren family there are over 250 different forms throughout the world, only some 30 species being represented in the eastern hemisphere. In the tropical part of the Americas this family is most numerously developed. Within the bounds of the United States there are twenty-eight species and subspecies, occupying nearly the whole country from the Atlantic to the Pacific.

With the exception of the Marsh Wrens they all prefer some cozy nook for their homes. The natural sites are in the cavities in trees and rocks but it often happens that farm buildings afford just the place that they desire. Their nests are usually dome-shaped and the eggs are numerous, the clutches varying from 6 to 11. There are usually two broods each year. The eggs are usually white or pinkish speckled with reddish-brown but sometimes they are immaculate white or nearly uniform brown or plain greenish-blue.

In plumage the sexes are alike; and the young do not differ materially, if at all, in coloration from the adults. Red, yellow, green, blue, or other pure colors are never found. On the upper parts brown or reddish hues predominate and these are usually varied with bars, streaks, or speckles of dusky. The under parts are white, gray, buffy, tawny, rufous, or sooty or have two or more of these colors combined; these parts are rarely immaculate and usually are streaked or barred.

The Wrens are small birds. Their bills are long (usually as long as the head although in some cases less) and compressed, usually slender and curved downward at the end. The bristles at the corners of the mouth are usually obsolete but frequently they are quite plain with one or two fairly well developed. The wing is rather short or very short, much concaved underneath and much rounded. The tail varies in its relative length, sometimes shorter than the lower part of the leg; sometimes slightly longer than the wing but usually about half or two-thirds as long as the wing; it is always rounded and sometimes graduated for more than one-third of its length; the tail-feathers are soft and rounded at the tips.

Many members of this family are fine songsters, notably the Cactus, the Carolina, and the Winter Wrens. When alarmed or displeased they give utterance to loud, harsh, and insistent calls. These little birds are never quiet but are always active and seemingly excited about something. The position in which they carry their tails is an indication of their nervous temperament.

Since the Wrens are among our most prolific song birds, it naturally follows that a large amount of insect food must be consumed by the nestlings. The parents are industrious foragers, and, when their home is in a garden, they will search every tree, shrub, and vine for caterpillars and examine every post and fence rail and every cranny or crevice for insects or spiders. No species of this family has been accused of harm, and their presence should be encouraged about farms, ranches, and residences.

CACTUS WREN

Heleodytes brunneicapillus couesi (*Sharpe*)

A. O. U. Number 713

Other Name.— Coues's Cactus Wren.

General Description.— Length, 8½ inches. Upper parts, brown, variegated; under parts, white, spotted with black. Bill, nearly as long as head, stout; wings, much rounded; tail, nearly as long as wing, decidedly rounded, the feathers with broadly rounded tips.

Color.— Crown and hindneck, plain deep brown, the feathers slightly darker centrally; back, shoulders, and

HOUSE WREN
Troglodytes aedon aedon Vieillot
WINTER WREN
Nannus hiemalis hiemalis (Vieillot)
SHORT-BILLED MARSH WREN
Cistothorus stellaris (Naumann)

CAROLINA WREN
Thryothorus ludovicianus ludovicianus (Latham)
BROWN CREEPER
Certhia familiaris americana Bonaparte
LONG-BILLED MARSH WREN
Telmatodytes palustris palustris (Wilson)

All ⅔ nat. size

rump, paler and more grayish-brown, variegated with white, upper tail-coverts and middle tail-feathers, brownish-gray, rather broadly, but irregularly, barred with dusky, these dusky bars sometimes much broken and confused; tail (except middle feathers), mostly black, the side feathers broadly barred with white, the rest crossed near tip by a broad bar or band of white; the outer webs of all except outermost pair broadly barred or banded basally with brownish-gray; wing-coverts and inner quills, mainly grayish spotted with dusky and also varied with whitish bars or streaks, especially on smaller coverts; primary coverts, primaries, and secondaries (except inner quills), dusky, their outer webs conspicuously spotted with white or brownish-white; a broad, conspicuous, and sharply defined stripe of white over the eye usually margined above by a narrow line of black; a broad brown stripe under the eyes and occupying upper portion of ear region, but extending beyond to side of neck; lores, grayish; rest of sides of head, white, or brownish-white, the lower part of the ear region streaked with black or dusky; chin, throat, and chest, white, spotted (rarely broadly streaked) with black; breast, white or buffy-white, deepening into ochraceous-buff or cinnamon-buff on flanks, abdomen, and anal region, the whole surface marked with streaks or spots of black, these larger and broader on flanks; under tail-coverts, white or buffy with large spots of black; bill, dusky horn color; iris, red.

Nest and Eggs.— NEST: In cactus thicket, yucca, or other thorny bushes, a large flask-shaped structure lying horizontal, with entrance at mouth; constructed of sticks, thorns, straw, and grasses, lined with feathers. EGGS: 4 to 7, white or buffy-white, thickly sprinkled with rich chestnut spots, sometimes hiding the ground color.

Distribution.— Desert regions from southern parts of California, Nevada, Utah, New Mexico, and Texas south to northern Lower California and the northern States of Mexico.

Take it from nearly every standpoint, Mother Nature is strict and harsh with all her children of the desert. Life is spent on the march or on the firing line. Nearly everything is fortified with thorns. The cactus has a panoply of points to protect its soft spongy meat; the mesquite, palo verde, and the delicate white poppy clothe themselves in thorns.

Of all the desert plants, the cholla cactus is the most treacherous. I shall never forget my first experience. It is a favorite nesting place of the Cactus Wren. When I first saw a Cactus Wren's nest, I was anxious to find out what it contained. It was a gourd-shaped bundle of fibers and grasses with a hallway running in from the side. I couldn't look in, so I tried to feel. I ran my hand in as far as I could till the thorns about the entrance pricked into my flesh. I started to pull back. The more I pulled, the tighter the thorns clung and the deeper they pricked. I was in a trap. I reached for my knife to cut some of the thorns off, but had to cringe and let some of the others tear out. I looked at them, but could see no barbs. Yet when they once enter the flesh, one can readily tell they have tiny barbs, for it tears the flesh to get them out.

The Cactus Wren, as a rule, selects the thorniest place in a cholla cactus, although he sometimes nests in a mesquite or palo verde. Like the Tule Wren or Winter Wren, this bird often builds nests that are not used. These are called "cock nests," and are probably built by the male while the female is incubating. It is a question whether they are built from the standpoint of protection, that is having several unused nests about as a ruse, or whether the bird merely builds homes until the pair gets a nest that suits them exactly. At any rate, we examined quite a good many nests before we really found one that contained eggs. We got the impression that some of these birds were doing nothing day after day except building new homes. Some of the Wrens, however, were young, and inexperienced at nest building, for occasionally we noticed where a nest was so poorly built that either the floor dropped out or the roof caved in.

Drawing by R. I. Brasher

CACTUS WREN (⅔ nat. size)

A desert bird that builds in a *chevaux-de-frise* of yucca bayonets and cactus needles

When one thinks of a Wren, he thinks of a tiny fidgety body with an up-turned tail. If he has this in mind when he visits the cactus country, he will likely not know what the Cactus Wren is, for it is a very unwren-like bird. It is larger in size than an English Sparrow or the Bluebird. Its song is unwren-like, but the bird may be recognized by the white throat and breast which are heavily marked with black round

spots. Like a Carolina Wren, it sings with head up and tail hanging. WILLIAM L. FINLEY.

Bryant's Cactus Wren (*Heleodytes brunneicapillus bryanti*) is darker and browner above

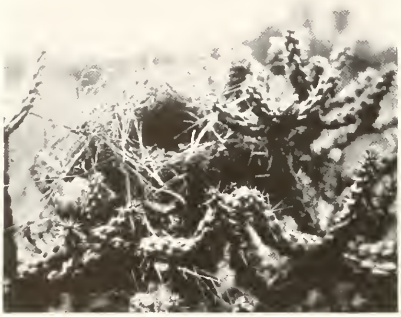


Photo by Mrs. F. T. Bicknell Courtesy of Nat. Asso. Aud. Soc.

NEST OF CACTUS WREN

than the common Cactus Wren, and its shoulders, back, and rump are conspicuously streaked with white; three of the lateral tail-feathers are distinctly barred with white; its under parts are more uniformly marked with black. It is distributed over the Pacific coast district of southern California and northern Lower California.

Though at present the Cactus Wren is found chiefly in the deserts and waste places where its diet is a matter of little or no economic importance, it is not at all unlikely that its feeding habits may some day affect agriculture, and for that reason its natural dietary preferences may well receive some consideration now. Those preferences were pretty clearly shown by examination of forty-one stomachs of the bird taken in southern California; these contained about 83 per cent. of animal matter and about 17 per cent. of vegetable food. Of the insects taken about 27 per cent. were beetles, chiefly weevils and snout-beetles, and all more or less injurious. Among the bugs that had been devoured were black scales, which are very injurious to fruit trees. The vegetable food (17 per cent.) consisted of fruit pulp and weed seeds, all of wild species. It therefore, appears that this Wren's food contains little that is useful to man, while the remainder is made up of elements which are, or would be, harmful on cultivated lands.

ROCK WREN

Salpinctes obsoletus obsoletus (*Say*)

A. O. U. Number 715

General Description.— Length, 6½ inches. Upper parts, grayish-brown, speckled; under parts, whitish streaked with dark. Bill, shorter than head, slender, and straight (except extreme tip); wings, rather long, moderately rounded; tail, about ¾ length of wing, slightly rounded, the feathers very broad.

Color.—Above, grayish-brown or brownish-gray changing on rump to wine-colored cinnamon, most of the surface marked with small wedge-shaped spots or short streaks of dusky; middle tail-feathers, grayish-brown barred with dusky; remaining tail-feathers grayish-brown, broadly tipped with cinnamon-buff and crossed by a broad band of black; a distinct whitish stripe over the eye and a grayish-brown one back of it; eye and cheek regions and lower portion of ear region, dull white or brownish-white; under parts, dull white, passing into pale cinnamon-buff on flanks; throat and chest (sometimes breast also) usually streaked with grayish-brown or dusky; bill, horn color; iris, brown.

Nest and Eggs.— NEST: Usually placed in a cleft of rocks; constructed of a large variety of materials, but principally small twigs, moss, wool, hair, grass, or weeds; a paving in front of nest made of small pebbles, pieces of glass, or rock. EGGS: 5 to 8, usually 5 or 6, glossy white, minutely and thinly speckled with chestnut.

Distribution.— Western North America; breeds from southern British Columbia, west central Alberta, and southwestern Saskatchewan south to Mexico and peninsula of Lower California and adjacent islands, east to western North Dakota, central Nebraska (casually western Iowa), and central Texas; winters in southern part of its United States range and in Mexico.

Wrens seem to have traditions as some people do. I do not remember ever examining the nest of the Parkman, or Western House, Wren and not finding a bit of snake skin woven into the home. Perhaps this answers the purpose of a hearthstone deity or a relic of long ago when the first Wrens must have fought the reptile tribes. The Rock Wren is not unlike its cousin in its

household eccentricities. It nests in a rocky crevice. It often makes a path into the nest. "And when it comes to lining the approaches of the chosen cavity, what do you suppose they use?" says Mr. W. L. Dawson. "Why, rocks, of course; not large ones this time, but flakes and pebbles of basalt, which rattle pleasantly every time the bird goes in and out. These rock chips are sometimes an inch or more in diameter, and it is difficult to conceive how a bird with such a delicate beak can compass their removal. Here they are, however, to the quantity of half a pint or more, and they are just as much a necessity to every well-regulated Salpinctean household as marble steps are to Philadelphians."

The Rock Wren is typical of the rimrock regions of the West. He is associated in my mind with the sand and the sage. I have often seen him in the arid desert regions of eastern Oregon. The first time I ever saw him, I recognized him instantly by his general Wren character. He is generally appreciated, for he is often seen where songsters are rather scarce. As Mrs. Bailey says, "Even his song, which at first hearing seems the drollest, most unbird-like of machine-made tinklings, comes to be greeted as the voice of a friend in the desert, and its quality to seem in harmony with the hard, gritty granites in which he lives. Its phrases are varied, but one of its commonest — given perhaps from the top of a cliff while his mate is feeding their brood on a ledge below — is little more than a harsh *kra-wee, kra-wee, kra-wee, kra-wee*, given slowly at first, then after a little bob repeated in faster time."

WILLIAM L. FINLEY.

Drawing by R. I. Brasher

ROCK WREN (⅔ nat. size)

A welcome sign of cheerful life in the torrid western cañons

CAROLINA WREN

Thryothorus ludovicianus ludovicianus (*Latham*)

A. O. U. Number 718 See Color Plate 102

Other Names.— Mocking Wren; Great Carolina Wren; Louisiana Wren.

General Description.— Length, 5½ inches. Upper parts, rusty-brown; under parts, buffy-white. Bill, shorter than head, slightly but decidedly curved downward; wings, rather short and rounded; tail, about 4/5 length of wing, rounded, the feathers broadly rounded at the tip.

Color.—Above, plain rusty-brown (nearly prouts-brown to chestnut-brown), duller on crown (especially on forehead), brighter (light chestnut or rufous-chestnut) on rump and upper tail-coverts; rump with concealed roundish spots of white, the feathers dark slate color or blackish-slate basally; wings and tail, duller brown than back, narrowly (sometimes indistinctly) barred with dusky, the exterior tail-feathers and primaries with interspaces between dusky bars much paler (pale buffy or dull whitish, at least in part); middle wing-coverts and some of greater coverts, usually with a small triangular terminal spot of white or pale buffy, margined (except at the ends) with dusky; over the eye a sharply defined and conspicuous stripe of white or buffy-white, bordered above by a narrow black line along the side margin of crown and neck; a broad stripe of rufous-brown back of the eye and occupying upper half (approximately) of ear region, continued (sometimes brokenly) across side of neck; the space under the eye and the lower portion of ear region, dull white, buffy-white, or pale buff, the feathers narrowly edged or margined with dusky, producing streaked or scale-like effect; cheeks, chin, and upper throat, plain dull white; rest of under parts, plain dull buffy-white tinged with buff on chest, sides, flanks, and anal region, or distinctly buff, deepest on flanks; under tail-coverts, buffy-whitish or pale buff broadly barred with black; flanks (occasionally sides also) very rarely barred with dusky-brown; bill, horn color; iris, brown.

Nest and Eggs.—Nest: Placed in brush heaps, holes in logs or rocks, in low bushes, or outbuildings; a large, rough structure of coarse grass, corn leaves, hay, leaves, corn silk, lined with horse-hair, feathers and fine grasses. Eggs: From 4 to 6, varying from white to pinkish-buff, so thickly sprinkled with brownish-pink as to obscure the ground color in some cases.

Distribution.—Eastern United States; breeds from southeastern Nebraska, southern Iowa, Ohio, southern Pennsylvania, and lower Hudson and Connecticut valleys south to central Texas (western Texas in winter), Gulf States, and northern Florida; casual north to Wisconsin, Michigan, Ontario, Massachusetts, New Hampshire, and Maine.

The folk-lore and tradition of the Old World marks the Wren as a tiny bird; American literature follows suit. Darius Green characterizes the family in these immortal words, "the little chatterin' sassy wren, no bigger'n my thumb," but the Carolina Wren certainly is not tiny. In fact it is so large that early American ornithologists referred to it as the Great Carolina Wren, with the accent on the Great.

Courtesy of Am. Mus. Nat. Hist.

CAROLINA WREN (¾ nat. size)

It sings nearly the whole year round

Notwithstanding its size it possesses in full the activity, nervousness, excitability, volubility, and curiosity attributed to Wrens from time immemorial. It seems full of song, sings nearly the whole year round, and its voice like that of other Wrens is loud, clear, strong and sweet, but its song does not express the bubbling, outpouring, irrepressible ecstasy that characterizes those of the House Wren and Winter Wren. One of its common phrases is very well expressed by the words *tea-kettle, tea-kettle, tea-kettle.* It has been called the Mocking Wren because some of its notes resemble those of other birds, particularly the whistling call of the Tufted Titmouse and a song of the Cardinal. Its notes are varied but probably it hardly deserves the name of an imitator.

It is not naturally as domestic as the House Wren, being more inclined to the neighborhood of woods and swampy thickets than to that of human habitations. If stared at it is likely to grow nervous and to betake itself quickly to cover, for it usually has a safe harbor under its lee. It is fond of high, thick shrubbery, but can hide readily in old stumps, under logs or in very low-growing vegetation to which it flies when no other cover is near.

Its abundant energy is expressed by both voice and tail and the latter is used freely for gesticulation.

Although this Wren is a cave dweller and nests normally in the hollows of trees or in other natural cavities in the wilderness, it seems more and more to acquire confidence in mankind and quite often builds in some nook in an outbuilding or even in a bird house or nesting box put up for more domestic birds. Rather recently two nests have been found in grape baskets hung up

in outbuildings. The only nest with eggs taken in Massachusetts that is now on exhibition in any museum is in the collection of the Boston Society of Natural History. Its history as told by its discoverer is this: He hung for safe keeping high under the ridgepole inside the barn a grape basket containing some sticks of dynamite. A few weeks later when he went to get it the Wren had built her nest in the basket, deposited her eggs and was incubating. The dynamite was removed with great care and replaced with paper, but the bird refused to be comforted and deserted the nest. EDWARD HOWE FORBUSH.

The Carolina Wren has to its credit an apparent disposition to destroy the dreaded boll weevil whose working on cotton-bolls has been a most serious matter in several Southern States. The Wrens live in Texas and Louisiana throughout the year, and frequent thickets and clearings littered with fallen timber. In these surroundings they capture the weevils during their period of hibernation, and it is apparent that they also take them in the Spanish moss during the same period.

The Florida Wren (*Thryothorus ludovicianus miamensis*) is larger than the Carolina Wren and its coloration is darker and richer; the upper parts are rich chestnut to dark chestnut, the stripe over the eye is decidedly buffy, the under parts (except the chin and upper throat) are deep clay color or tawny yellow, the flanks tinged with chestnut and (sometimes the sides also) barred with chestnut or dusky. It is found only in the peninsula of Florida, south of the Suwanee River.

Photo by Jas. Armfield Courtesy of Nat. Asso. Aud. Soc.

NEST OF A CAROLINA WREN

In an old wash-basin

BEWICK'S WREN

Thryomanes bewicki bewicki (*Audubon*)

A. O. U. Number 719

Other Names.—Long-tailed House Wren; Song Wren.

General Description.—Length, 5½ inches. Upper parts, brown; under parts, grayish-white. Bill, shorter than head, slender; wings, short and rounded; tail, about length of wing, rounded, the feathers broadly rounded at the tip.

Color.—*Crown, hindneck, back, shoulders and smaller wing-coverts, plain brown*, the rump, more chestnut-brown; secondaries and greater wing-coverts, brown, the former distinctly, the latter indistinctly, barred with dusky; primaries dusky, their outer webs edged and spotted with pale brownish; upper tail-coverts and middle tail-feathers, brownish-gray, the latter distinctly, the former indistinctly, barred with dusky; a conspicuous and sharply defined stripe of white or buffy-white extending over the eyes to the back of the head, the front portion narrower and usually, more grayish; a broad brown stripe behind the eye occupying upper half (approximately) of ear region; *under parts, dull grayish-white* or very pale gray, becoming more decidedly white on abdomen, the sides and flanks tinged with brown; iris, brown.

Nest and Eggs.—NEST: Located like the House Wren, almost anywhere, in outbuildings, boxes, stumps, watering pots, or any hollow objects, hung in trees or lying on ground, constructed of materials similar to those used by the House Wren. EGGS: 4 to 7, dull white speckled with chestnut, more profusely around large end where often forming a wreath.

Distribution.—Eastern United States; breeds from southeastern Nebraska, northern Illinois, southern Michigan, and south-central Pennsylvania south to central Arkansas, northern Mississippi, central Alabama, and along the Alleghenian highways to northern South Carolina; winters from near the northern limit of its range southward to the Gulf coast and Florida; accidental in Ontario and New Hampshire.

Fussy, nervous, excitable, impatient, restless, and inquisitive, his tail cocked up over his back with true Wren-like pertness, this energetic little bunch of flesh and feathers is much like his well known cousin, the House Wren. But he is a much better singer than Mr. Jenny.

"Not a voluble chatter, like the House Wren's," says W. F. Henninger (in Dawson's *Birds of Ohio*), "but clear, strong and cheery, easily heard for a quarter of a mile — such is the song of Bewick's Wren. Easily distinguished from the former, he has the same teasing ways about him — now peeping into some corner, now examining the wood-pile, now crawling into a knot-hole of a smoke-house, creeping forth like a mouse at the next moment, whisking his erectly carried tail, watching you carefully though fearlessly, he all of a sudden mounts some fence-post, pours forth his proud metallic notes, drops down into the chicken yard, disappears in the pig pen, mockingly scolds at you, sings again, and is willing to keep this game up all day. We do not know which to admire more, his beautiful song or his confidence in man."

This species is also Wren-like in its selection of queer nesting places — an old shoe, the arm of an old coat, a discarded battered tin cup, and so on. Indeed, in this respect these Wrens reveal wonderfully versatile adaptability, which, incidentally, reflects a most gratifying friendliness for and confidence in mere man.

The economic value of this Wren's feeding habits is beyond all question very great. The contents of 146 stomachs examined showed that of its diet for a year a little more than 97 per cent. was composed of insects and less than 3 per cent. of vegetable matter. The only vegetable matter found that could possibly be useful to man was a little fruit pulp. Of the animal food various families of bugs made up the largest percentage. These included several species belonging to the same family as the highly destructive chinch bug, and their destruction by birds undoubtedly is very beneficial. It was also evident that the bird feeds on the black olive scale, a very harmful species. About 21 per cent. of the bird's food consists of beetles, chiefly ladybirds, weevils, and other species. Ladybirds, which constituted about 3 per cent. of the food found in the stomachs examined, are probably the most useful insects of their order, and the bird's destruction of them is regrettable. On the other hand, the bird eats weevils, or snout beetles, to the extent of nearly 10 per cent. of its food, and as all of these are harmful, and some the most injurious of all pests of the orchard or forest, it must be admitted that the Wren pays a fair price for the ladybirds. Beetles belonging to the family of engravers, which live under the bark of trees and greatly damage valuable timber, are also destroyed by these Wrens.

West of the Mississippi are five regional varieties of Bewick's Wren. In the coast region of middle California is Vigors's Wren (*Thryomanes bewicki spilurus*), larger and browner than the type species. In the southern part of the Great Plains is the Texas Wren (*Thryomanes bewicki cryptus*); this member of the family is also larger than his eastern relative but his coloration is grayer. Baird's Wren (*Thryomanes bewicki bairdi*) breeds from California (east of the Sierra Nevada), southern Nevada, southern Utah and southeastern Colorado south into Mexico; he is smaller than Bewick's Wren. Still smaller and with his upper part a duller, or slightly olive, brown is the San Diego Wren (*Thryomanes bewicki charienturus*); he lives in the coast district of southern California and northern Lower California. The Seattle Wren (*Thryomanes bewicki calophonus*) is a deep sepia on his upper parts; his home is the yellow-pine country of the Pacific slope from Southern Vancouver and southern British Columbia south to Oregon.

HOUSE WREN

Troglodytes aëdon aëdon *Vieillot*

A. O. U. Number 721 See Color Plate 102

Other Names.— Brown Wren; Common Wren; Wood Wren; Stump Wren; Short-tailed House Wren; Jenny Wren.

General Description.— Length, 5 inches. Upper parts, brown; under parts, white and grayish-brown. Bill, shorter than head, straight or but very slightly curved downward, tapering gradually; wings, moderate in length, rounded; tail, about length of wing, much rounded, the feathers narrow with rounded tips.

Color.—*Above, brown* (nearest prouts-brown) duller

and grayer on crown, where the feathers have the central portion indistinctly darker; brighter or more rufescent on rump and upper tail-coverts; back and shoulders, sometimes narrowly and indistinctly barred with dusky; upper tail-coverts, narrowly barred with dusky; *tail, greater wing-coverts, and secondaries, brown, narrowly barred with black;* primaries dusky, their outer webs spotted with pale brown, these spots in transverse series forming regular, broad bars; under eye, cheek, and ear regions (except upper portion of the latter), very pale grayish-buffy or dull brownish-white; *chin, throat, and abdomen, dull white,* the last sometimes speckled with dusky; chest and sides of breast, very pale grayish-brown or grayish-buffy, passing into a deeper and more decidedly brown hue on sides and flanks, which are barred (narrowly) with darker brown or dusky; under tail-coverts, dull white tinged or intermixed with rusty-brown and irregularly barred with black; iris, brown.

Nest and Eggs.— NEST: Usually in boxes erected by man for their convenience, under house cornices and eaves, in fact almost anywhere, from the pocket of a scarecrow to an old tin can on the ground; constructed of small twigs, grass, feathers, spiders' webs, and lined with soft strips of bark, down, or feathers. EGGS: From 6 to 8, dull white so profusely spotted with reddish- or pinkish-brown as to obscure the ground color.

Distribution.— Eastern United States and Canada; breeds north to New Brunswick, Maine, Ontario, Michigan, and eastern Wisconsin, and south to Virginia and Kentucky; winters in the South Atlantic and Gulf States, and through eastern Texas to eastern Mexico.

Fussy little "Jenny" Wren has the proud distinction of having forced upon her entire species the popular name which was given her by the early English colonists, in memory of the much milder mannered bird of the old country. As Mrs. Wright says: "We always speak of Jenny Wren; always refer to the Wren as *she,* as we do of a ship. It is Johnny Wren who sings and disports himself generally, but it is Jenny who, by dint of much fussing and scolding, keeps herself well to the front. She chooses the building-site and settles all the little domestic details. If Johnny does not like her choice, he may go away and stay away; she will remain where she has taken up her abode and make a second matrimonial venture." (*Birdcraft.*)

This is an accurate estimate of the character of Jenny who, in truth, is a good deal of a shrew, and a chronic scold on general principles. By the same token, Johnny is likely to present a pretty good imitation of a henpecked husband, for from the moment he promises to love, cherish, and obey Jenny, he hardly dares say his soul is his own. However, he doesn't appear to be in the least depressed by this state of affairs, for his bubbling song is one of the merriest and most spontaneous of bird utterances.

The Latin term *Troglodytidæ,* under which these birds are classified, means literally "cave-dwellers," and is appropriate as applied to the European Wren, which fashions a cave-shaped nest, and also as to the American species (the present one, the Winter Wren and the Long and Short-billed Marsh Wrens) which build in cavities or construct nests after the general pattern of the European species. The House Wren is famous for the odd kinds of cavities which it selects for its nest. It is quick to take advantage of a bird-box of almost any kind, and hollow limbs or trunks of fruit trees are also often

Courtesy of Am. Mus. Nat. Hist.

HOUSE WREN (⅔ nat. size)

A fussy, scolding mite

utilized. In fact the House Wren seems to be especially partial to apple orchards. But lacking a natural or prepared cavity, almost any substitute will do. For example, a discarded straw hat or leather glove is often used, if it is found in the right surroundings, and battered fruit-cans are frequently pressed into service. Nor is the bird in the least concerned as to whether the article with a cavity in it is discarded or not

This was proved by a photograph, reproduced in one of the magazines a few years ago, which showed a House Wren's nest built neatly in one of the hip pockets of a pair of fishing trousers which some dutiful Mrs. Izaak Walton had hung out on a line to dry. It is a safe conjecture that Izaak had to do his fishing in another pair of trousers until that little domestic affair had been completed.

Photo by H. K. Job Courtesy of Outing Pub. Co.

HOUSE WREN

Emerging from nest in an old can nailed to an apple tree

An experiment of Mr. J. Alden Loring, an experienced field-naturalist of Owego, N. Y., demonstrated in a most interesting and conclusive manner the homing instinct of a particular House Wren. The bird built her nest in a bird-box in Mr. Loring's back yard, and he tamed her so that she would take meal worms out of his hand. Jenny disappeared in the fall and doubtless made the long migratory journey to the southland. The following spring, Mr. Loring saw a pair of the birds examining his bird-box and took his stand as he had the year before, holding out meal worms in his hand. In a few minutes one of the birds alighted on his arm, with very little show of fear, and seized one of the worms. As it had taken much patience and persistence to overcome the bird's fear, Mr. Loring regarded this as conclusive proof that this little Wren was the very one he had tamed the year before. GEORGE GLADDEN.

As regards food habits, the House Wren is entirely beneficial. Practically he may be said to live upon animal food alone, for an examination of fifty-two stomachs showed that 98 per cent. of the contents was made up of insects or their allies, and only 2 per cent. was vegetable food, including bits of grass and similar matter, evidently taken by accident with the insects. Half of this food consisted of grasshoppers and beetles; the remainder, of caterpillars, bugs, and spiders.

Dr. Eaton notices that House Wrens pay frequent visits to the nests of Yellow Warblers, Chipping Sparrows, and other species which live near his home, and peck small holes in the eggs.

In western North America the House Wren is decidedly paler and grayer and his back and shoulders are usually distinctly barred with dusky; he is also larger. The Western House Wren, or Parkman Wren (*Troglodytes aëdon parkmani*), as he is called, breeds from southern British Columbia, northern Alberta, central Saskatchewan, and southern Manitoba south to Lower California, southern Arizona, southwestern Texas, southern Missouri, and southern Illinois. In the winter he is found from California and Texas south into Mexico.

WINTER WREN

Nannus hiemalis hiemalis (*Vieillot*)

A. O. U. Number 722 See Color Plate 102

Other Names.— Wood Wren; Mouse Wren; Spruce Wren; Short-tailed Wren.

General Description.— Length, 4 inches. Upper parts, reddish-brown; under parts, pale wood-brown, speckled with dusky. Bill, shorter than head, very slender, and awl-shaped; wings, short and rounded; tail, 2/3 length of wing, much rounded, the feathers narrow with rounded tips.

Color.—*Above, reddish-brown*, the back, shoulders, and rump barred with dusky; tail, light chestnut-brown or reddish-brown, narrowly (sometimes indistinctly) barred with dusky; wings, similar in color to back, barred with dusky; under eye and ear regions, brownish-buffy, narrowly streaked with brown; a narrow stripe of brownish-buffy over the eye and a narrow stripe of brown back of the eye; cheek region, chin, throat, and chest, light wood-brown or pale cinnamon; the lower throat and chest, sometimes speckled

with dusky, rest of *under parts, speckled or finely marked with dusky* on a pale wood-brown or cinnamon ground-color; iris, brown.

Nest and Eggs.— NEST: In cavity of stump, or among roots of upturned tree; constructed of small twigs, plant stems, moss, and lichens woven together and warmly lined with moss, fur, hair, and feathers, with a small circular opening. EGGS: 5 to 7 or 8, creamy-white, minutely dotted with reddish-brown and lavender.

Distribution.— Eastern United States and Canada; north to Nova Scotia, Prince Edward Island, New Brunswick, Quebec, Ontario, and Manitoba; breeding southward to Massachusetts, New York, Michigan, and Wisconsin, more rarely to northern Indiana and Illinois and central Iowa, and through mountain districts of Pennsylvania, Maryland, Virginia, and West Virginia to western North Carolina; wintering from near southern breeding limit to northern Florida and thence along Gulf coast to Texas.

"Such a dapper, fidgety, gesticulating, bobbing-up-and-down-and-out-and-in little bird, and yet full of such sweet, wild melody!" is Mr. Burroughs's capital description of the Winter Wren. All too seldom do we hear this "sweet, wild melody," instinct with that indefinable yet eloquent message straight from the soul of Nature. Fortunate indeed is the listener whose heart can receive that message! Yet it is heard by too few who could really heed it, because the singer comes infrequently within the hearing of those whose ears are properly attuned.

The bird's northern migration in April takes it into the depths of the Canadian wilderness and swamps, though it may be found breeding in such surroundings in northern Massachusetts and southern New Hampshire and Vermont, in the Catskills and in northern New York and in the northern part of the lower peninsula of Michigan. Mr Hoffmann describes the song as "long and high, in two equally balanced parts, the first ending in a contralto trill, the second in a very high trill; after a little interval the song is repeated or answered." Thoreau likened the song of a bird he failed to identify, to "a fine corkscrew stream issuing with incessant lisping tinkle from a cork, flowing rapidly, and I said that he had pulled out the spile and left it running." And this probably was the song of the Winter Wren.

The bird somewhat resembles the House Wren, though it is about an inch shorter, this abbreviation being especially noticeable in the Winter Wren's tail, which it holds up, Wren-fashion, over its back but tipped even further forward than are those of his relatives. Another distinguishing mark is the brownish-buffy line over the Winter Wren's eye, which the House Wren lacks. Again, the Winter Wren sings almost invariably from a low perch on a dead limb, or sometimes even when hidden in a brush-heap or in dense undergrowth. Apparently, as Mr. Torrey said, he believes that little birds should be heard and not seen.

Two regional varieties of the Winter Wren are the Western Winter Wren (*Nannus hiemalis pacificus*), found in western North America, breeding from Alaska south to central California and northern Colorado and wintering from southern British Columbia to southern California and southern New Mexico, and the Kodiak Winter Wren (*Nannus hiemalis helleri*), found on the island of that name. Both are larger and darker than the eastern form.

The Alaska Wren (*Nannus alascensis*) and the Aleutian, or Attu, Wren (*Nannus meliger*) are closely allied to the Winter Wrens. They average larger and their coloration is paler and duller. The Alaska Wren is found in the western part of the Alaska peninsula and the islands off the coast while the Aleutian is confined to the western islands of the group of that name.

SHORT-BILLED MARSH WREN

Cistothorus stellaris (*Naumann*)

A. O. U. Number 724 See Color Plate 102

Other Names.— Fresh-water Marsh Wren; Meadow Wren; Grass Wren.

General Description.— Length, 4½ inches. Upper parts, black, pale brown, and whitish in streaks; under parts, white and cinnamon-buff. Bill, much shorter than head, rather stout, nearly straight; wings, short and rounded; tail nearly as long as wing, graduated for 2/5 its length, the feathers narrow, tapering toward the end but with rounded tip.

Color.— *Crown, streaked* with black and light brown, except on forehead, which is sometimes uniform brown; hindneck light brown; *back and shoulders, black, narrowly streaked* with brownish-white; rump, light buffy-brown or cinnamon-brown, streaked or otherwise variegated, chiefly along central line, with black and whitish; upper tail-coverts, light brown, barred with black and tipped with dull whitish; tail, barred with black and light grayish-brown in varying relative pro-

portions; wing-coverts, pale buffy-brown, barred or transversely spotted with blackish; secondaries and primaries, dusky, their outer webs with broad marginal spots of pale buffy-brown producing broad bands on closed wing; sides of head, pale brownish-buff or dull brownish-white, indistinctly streaked with darker; *check region, chin, throat, breast, and abdomen white (slightly dull or buffy)*; chest, sides, flanks, and under tail-coverts cinnamon-buff.

Nest and Eggs.— NEST: On or close to the ground, in a tussock of marsh grass, the tops of which are deftly and closely woven together forming roof and sides; construction similar to the Long-billed Marsh Wren's, but shape less clearly defined because of its location; lining made of finer grass, cat-tail down, and some feathers. Eggs: 6 to 8, pure white, unmarked; rarely with a few lavender marks.

Distribution.— Eastern North America; breeds from southeastern Saskatchewan, southern Keewatin, southern Ontario, and southern Maine south to eastern Kansas, central Missouri, central Indiana, and northern Delaware; winters from southern Illinois and southern New Jersey to southern Texas, Louisiana, and Florida; accidental in Colorado.

The curious habit — if it may correctly be termed a habit — of building more than one nest, but using only one, which seems to be a trait of the Wren family — and of other species as well — appears to be quite strongly developed in this little bird. That very common type of observer who is quick to account for the actions of wild creatures, by ascribing them to distinctively human mental operations, explains this particular performance by attributing it to "strategic ability" in the animal concerned. This implies the possession and exercise by the animal of the reasoning power, in fact of actual subtlety, in a degree which none of its other observed acts indicate. Much more sensible explanations of such acts are that they are due to indecision or forgetfulness or sheer stupidity. In some instances the building of a

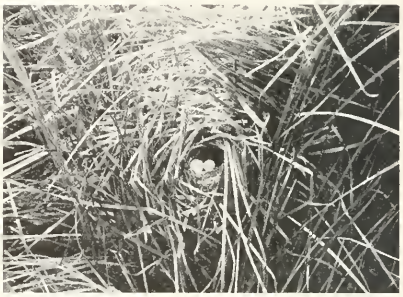


Photo by H. K. Job Courtesy of Outing Pub. Co.

NEST OF SHORT-BILLED MARSH WREN

second nest and the desertion of the first may mean that the bird discovered something undesirable about the situation of the first one. But what is to be said of the Phœbe, for example, who was industriously building at the same time three nests within two or three feet of one another on the same beam under a porch, and doubtless would have persisted in this superfluous labor had not her attention been concentrated on one of the nests by the placing of stones over the other two. This may have been an attempt at profound strategy, but common sense prompts the explanation that it reflected downright stupidity.

As to this particular Wren's needless nest building, we certainly have no good reason to suppose that it bespeaks a strategical faculty, or anything of the kind. If the Phœbe was so forgetful as to build three nests in plain sight, and within a few feet of one another, an equal degree of forgetfulness might easily overtake a Wren, building in a uniform growth of marsh-grass and reeds so dense that nests might be completely concealed from each other though they were placed only a few yards apart

There are, however, certain facts about the

Drawing by R. I. Brasher

SHORT-BILLED MARSH WREN (⅔ nat. size)

Mouse-like in its ability to scamper through grass and brush and to elude the sharpest eye

nest-building and other habits of this Wren which are both significant and interesting. In the first place, it is much more likely to be heard than seen, for it is nothing short of mouse-like in its ability to scamper around through the grass or brush, and elude even the sharpest and most practiced eye. Again, though it usually places its nest in marshy land, the globular structure is seldom built directly over the water, as that of the Long-billed species is likely to be. The entrance to the nest is at the side, but it is usually almost completely concealed.

As its name implies, its bill is shorter than that of its near relative, from whom it may also be distinguished by its striped head and upper back, and by its lack of a white line over the eye. Like the Long-billed bird, it clings to grass and reed stalks in a position as nearly upright as it can assume, and with its tail cocked, Wren-like, over its back. Its song, however, though voluble and delivered with the rapidity characteristic of its family, is composed of notes which are more sibilant and Sparrow-like than are those of other Wrens.

LONG-BILLED MARSH WREN

Telmatodytes palustris palustris (*Wilson*)

A. O. U. Number 725 See Color Plate 102

Other Names.— Marsh Wren; Reed Wren; Cat-tail Wren; Salt-water Marsh Wren.

General Description.— Length, 5 inches. Upper parts, brown and black with white streaks; under parts, white and pale brown. Bill, shorter than head, slender, gently curved for most of its length; wings, moderate in length and much rounded; tail, nearly as long as wing, much rounded, the feathers not tapering and with broadly rounded tips.

Color.— Crown, dull black, brownish centrally, usually with a broad and distinct though never sharply defined center area of olive-brown on forehead and crown, occasionally continued to the hindneck; hindneck, mostly plain brown; *back, black, streaked with white;* shoulders, rump, and upper tail-coverts, plain brown; lesser and middle wing-coverts plain brown; greater coverts, brown, barred with dusky; *over the eye, a narrow stripe of white narrowly streaked with blackish and extending to the edges of the back of the head;* back of the eye, a dusky streak; cheek region and *under parts, dull white, passing on sides and flanks into pale brown,* the chest usually faintly tinged with the same, the sides and flanks sometimes speckled or indistinctly barred with darker brown or dusky; iris, brown.

Nest and Eggs.— NEST: A remarkable coconut-shaped structure of interwoven reeds, strongly fastened to upright sedges or cat-tails, lined with fine grass and cat-tail down, with side entrance and nearly waterproof. EGGS: 5 to 9, chocolate, generally sprinkled with deeper colored specks and spots.

Distribution.— Eastern United States, chiefly east of the Allegheny Mountains; north to Massachusetts and New York; west to western New York and Pennsylvania; breeds southward to the Potomac valley and Atlantic coast of Maryland and Virginia; in winter southward to North and South Carolina, occasionally to western Florida, occasionally wintering in northern portions of its range.

Photo by H. K. Job Courtesy of Outing Pub. Co.

LONG-BILLED MARSH WREN

At its nest with food for its babies

The canoeist who paddles or drifts quietly and slowly along some sluggish river, bordered by broad meadow marshes, may catch sight of a nervous little brown bird hanging to the stems or leaves of rushes, reeds, or cat-tails along the margin and regarding him with alert, appre-

hensive curiosity. This is the Long-billed Marsh Wren, which may be known by its long, slender bill and a Wren-like habit of flirting and cocking up the tail when excited.

This Wren is fond of the deep and oozy marsh, near slow-running streams or dark, swampy pools

Drawing by R. I. Brasher

LONG-BILLED MARSH WREN (⅔ nat. size)

An irrepressible songster and wonderful architect

while the smaller Short-billed Marsh Wren prefers merely moist, grassy, or reedy meadows.

Marsh Wrens, like other Wrens, are irrepressible songsters. They are not satisfied with daylight singing alone but often carol at night. Sometimes when the full moon lights up the marshes the singing of the Wrens becomes almost a continuous performance, ringing over the meadows far and near. This bird breeds abundantly in fresh-water marshes and open swamps and may be found frequently in salt marshes and along the shores of tidal streams. The unique globular nests are hung concealed in the marsh vegetation or even attached to some shrub growing over the water, and with Wren-like industry a pair often constructs several nests. Various theories have been offered to account for this habit. One is that the Wren forsakes its nest the moment it has been disturbed or even touched by human hands. Samuels and others have opined that duplicate nests are built to protect the sitting female, for it is noticeable that the male often lures a visitor to one of the empty nests which, numerous as they often are in the marsh, may puzzle water snakes and other enemies searching for eggs and young birds. Others believe that the male, being full of vigor and vitality, must work off his nervousness in some manner and so occupies himself in nest-building. Excessive nest construction is characteristic of other Wrens also.

Notwithstanding the fact that the Marsh Wren is a common bird in many suitable localities, the inaccessibility of its retreats, its shyness, and the facility with which it keeps under cover have made observation of its habits exceedingly difficult and they are very little known. It has been seen, however, to attack and perforate the eggs of Bitterns, but this may be only a necessary retaliation, as Bitterns and Herons have been known to kill and eat the young of smaller birds.

EDWARD HOWE FORBUSH.

The Long-billed Marsh Wren and its regional varieties are distributed over the United States and southern Canada and south into Mexico in winter. On the Great Plains and prairie districts, where it is slightly larger and redder in coloration, it is known as the Prairie Marsh Wren (*Telmatodytes palustris iliacus*); on the Rocky Mountain plateau its coloration is paler and it is called the Western Marsh Wren (*Telmatodytes palustris plesius*); in the Pacific coast district the markings vary slightly and it is known as the Tulé Wren or California Marsh Wren (*Telmatodytes palustris paludicola*); along the south Atlantic coast are two forms with markings a little different from the others and from each other and these are given the names of Marian's Marsh Wren (*Telmatodytes palustris marianæ*), and Worthington's Marsh Wren (*Telmatodytes palustris griseus*).

NUTHATCHES AND CREEPERS

Order *Passeres;* suborder *Oscines;* families *Sittidæ* and *Certhiidæ*

UTHATCHES are small birds which are ranked as *Oscines*, that is "song birds," by the ornithologist, because they have vocal organs, though none are real singers. The characteristic Nuthatch has a straight bill, nearly as long as its head; long and rather pointed wings; and tail from much less than to a little more than half as long as the wing, rounded at the tip. They are generally plain bluish-gray or brownish-gray above, and white, buff, or brownish beneath. In general structure and habits they occupy an intermediate position between the Creepers, and the Titmice, but they differ much from the latter in being perhaps the most expert climbers among birds, as they run nimbly up and down the trunk of a tree or the face of a cliff or stone wall, often head downward, which the Woodpeckers and Creepers are unable to do. The family comprises nearly 40 known species and subspecies. The family is chiefly an Old World one, only four species being represented in America.

The Creepers are found in the northern hemisphere and in Australia. There are five families; but only one, the *Certhiidæ*, is represented in America.

BROWN CREEPER

Certhia familiaris americana *Bonaparte*

A. O. U. Number 726 See Color Plate 102

Other Names.— Common Creeper; American Creeper; American Brown Creeper; Tree Creeper; Little Brown Creeper.

General Description.— Length, 5¾ inches. Upper parts, brown with streaks of grayish-white; under parts, dull white. Bill, slender, sharp, and curved downward; wings, moderate in length, rounded; tail, about length of wing, graduated, the feathers with rigid and sharp tips.

Color.— General color above, sepia or bister-brown (varying in intensity) relieved by conspicuous streaks of dull grayish-white, these broader and less sharply defined on the back, the prevailing color of the lower back being pale brownish-gray or grayish-brown; *rump, russet* or dull tawny-ochraceous; upper tail-coverts, pale raw umber-brown; tail, pale grayish-brown (nearly hair-brown); lesser wing-coverts pale brownish-gray; rest of wings, mainly dark sepia brown or dusky; the outer webs of greater coverts, broadly tipped with whitish and broadly edged toward base with pale buffy grayish; primaries crossed, obliquely, on both webs by a broad band of pale buff or buffy white; a dull whitish or pale brownish-gray strip over the eye; lores and ear region dark sepia brown, streaked with dull whitish; space under the eyes, cheeks, and under parts, plain dull white.

Nest and Eggs.— NEST: A collection of twigs, cottony fibers, bark strips and feathers, placed behind a loosened section of bark, nearly always in a balsam fir tree. EGGS: 5 to 8, white or creamy freckled with cinnamon and lavender specks, often wreathed around large end.

Distribution.— Eastern North America; north to Ontario, Manitoba, etc. (probably to southern Labrador and southwestern shores of Hudson Bay), west to eastern portion of the Great Plains; breeding southward to Massachusetts, New York, northern Indiana, southeastern South Dakota, and southeastern Missouri and along higher Alleghenies to mountains of North Carolina (above 4000 feet); wintering over a large part of its breeding range and south to northern Florida and central Texas.

This is a rather characterless and uninteresting bird, with neutral plumage and somewhat monotonous habits. Alighting near the base of a tree, it hitches its way upward, generally in a spiral course, examining the crevices in the bark with its long, slender, and curved bill, and uttering meanwhile a faint lisping call. Its bill is so weak that it does not attempt actually to dig, as do the Woodpeckers; it simply searches for insects concealed in crevices or underneath the bark which becomes separated from the main growth.

The Tree Creeper somewhat resembles the Nuthatches in its habits, but climbs only up-

ward or at least in an upright position. From one-half or two-thirds of the way up a tree, it is likely to swoop down to the base of another one nearby, only to go through the same operation.

Drawing by R. Bruce Horsfall

BROWN CREEPER (nat. size)

It may readily be identified by these characteristics, plus the peculiarities that it has a noticeably long graduated tail, nearly or quite as long as the wing, with the feathers stiffened and pointed at the end, and that it clings closely to the bark.

William Brewster says that in its breeding ground in the Canadian forests it has a sweet song of four notes, the last of which dies away "in an indescribably plaintive cadence, like the soft sigh of the wind among the pine boughs"; but this utterance is seldom heard during its migration through the United States. Mr. Burroughs has heard it in Ulster county, N. Y., in March.

The food of the Brown Creeper consists of minute insects and insects' eggs, also cocoons of tineid moths, small wasps, ants, and bugs, especially scales and plant licè, with some small caterpillars. As it remains in the United States throughout the year, it naturally secures hibernating insects and insects' eggs, as well as spiders and spiders' eggs, that are missed by the summer birds. On its bill of fare we find no product of husbandry nor any useful insects.

There are four other members of this same Creeper family in North America. They vary but little from the familiar Brown Creeper and from one another. The Mexican, or Sierra Madre, Creeper (*Certhia familiaris albescens*) belongs in the mountains of Mexico as its name implies, but is also found north into southern Arizona. The Rocky Mountain Creeper (*Certhia familiaris montana*) lives in the Rocky Mountains from Alaska, central British Columbia, and central Alberta, south to Arizona and New Mexico; in winters it may be found in southeastern California and probably in Mexico. The Sierra, formerly known as the California, Creeper (*Certhia familiaris zelotes*) is found from the Cascade Mountains of Oregon and the Sierra Nevada of California south to the San Jacinto Mountains and in the winter in the adjacent valleys. The California, formerly known as the Tawny Creeper (*Certhia familiaris occidentalis*), occurs on the Pacific coast from Sitka, Alaska, to the Santa Cruz Mountains, California.

WHITE-BREASTED NUTHATCH

Sitta carolinensis carolinensis *Latham*

A. O. U. Number 727 See Color Plate 103

Other Names.— White-bellied Nuthatch; Carolina Nuthatch; Common Nuthatch; Sapsucker (incorrect); Tree-Mouse; Devil Downhead.

General Description.— Length, 6 inches. Upper parts, bluish-gray and black; under parts, white.

Color.— Crown, hindneck, and extreme upper back,

CHICKADEE
Penthestes atricapillus atricapillus (Linnaeus)

ACADIAN CHICKADEE
Penthestes hudsonicus littoralis (H. Bryant)

RED-BREASTED NUTHATCH
Sitta canadensis Linnaeus

WHITE-BREASTED NUTHATCH
Sitta carolinensis carolinensis Latham
MALE FEMALE

TUFTED TITMOUSE
Baeolophus bicolor (Linnaeus)
MALE FEMALE

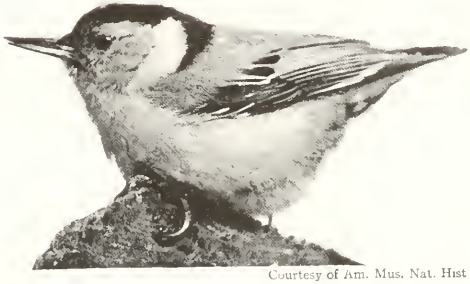
All ⅔ nat. size

uniform black with a bluish or bluish green gloss; back, shoulders, lesser wing-coverts, rump, and upper tail-coverts, uniform bluish-gray; middle, greater, and primary wing-coverts, black margined with bluish-gray (like color of back), the tips of the greater coverts, sometimes whitish forming a narrow indistinct band; inner wing-quills with inner webs black; their outer webs *bluish-gray*; that of third with an elongated patch of black, *rounded at tip*, the tip and edge bluish-gray; secondaries, black, edged with bluish-gray; primaries blackish slate or slate color; two middle tail-feathers, plain bluish-gray, rest of tail-feathers, black crossed by a band of white; a stripe over the eyes, sides of head, sides of neck, and under parts, plain white or grayish-white; anal region and tail-coverts, light chestnut; under wing-coverts, black; under primary coverts and basal portion of inner webs of longer primaries, white forming a conspicuous patch; iris, brown.

Nest and Eggs.— NEST: Usually in a dead stump or tree from 2 to 60 feet up, sometimes in a deserted Woodpecker hole; loosely constructed of soft felted rabbits' fur, leaves, feathers, and hair. EGGS: 5 to 8, white or pinkish-white, spotted with chestnut and a few lavender specks.

Distribution.— Eastern North America; north to New Brunswick and northern Ontario; west to eastern edge of Great Plains; south to Georgia and Gulf States (except coast belt).

The Nuthatches and Chickadees one may reckon among the comparatively few "upside-down birds" he has known, and it is a curious fact that, though they are totally different species, they seem to like one another's society, and frequently are found working and frolicking through the woods together. A bond of sympathy may be detected in their common topsy-turvy habits. It is clear that temperamentally the birds are similar, and that the Nuthatch is as much a small boy of the feathered world as is the Chickadee, though perhaps a somewhat more serious-minded one.



Courtesy of Am. Mus. Nat. Hist

WHITE-BREASTED NUTHATCH

A bird of topsy-turvy habits

The White-breasted species is much the commoner representative of the two which occur in the eastern United States — the other being the Red-breasted. It is a common winter resident in the southern New England States, and in the lower Hudson Valley. It prefers the deciduous trees to the conifers and in that respect differs from the Red-breasted. As has been intimated, it is a decidedly industrious bird and is almost incessantly on the move. It is quite as likely to be upside down as right side up while it explores the trunk and limbs of a tree, and it often clambers entirely around a horizontal limb. The evident ease with which it assumes the inverted position is due chiefly to its lack of dependence upon its tail-feathers, which the true Woodpecker always employs as a prop, and by means of which it holds its body at a perceptible angle from the line of the limb or tree trunk to which it clings. In this position the Woodpecker can strike with its bill a much harder blow than can be delivered by the Nuthatch, which makes little use of its tail either in climbing or in digging. Consequently the Nuthatch's bill is long, pointed, and rather slender, while the Woodpecker's is stout and wedge-shaped at the extremity.

The term "sapsucker," which is often applied to this bird, is an unconscious but unqualified slander, due of course to ignorance. The true Sapsucker is a totally different bird, and does not even faintly resemble the Nuthatches. Probably this confusion arose from the fact that both the Downy Woodpecker, which is about the size of the Nuthatch, though its appearance is very different, and the Hairy, which resembles the Downy but is considerably larger, dig holes in

the bark of trees, though not for the purpose of drinking sap. This habit has caused careless observers — of which there is always a bountiful supply — to blame not only the Hairy and the Downy, but even the little Nuthatch, which does not and could not dig holes in bark, for the destructive work of the true Sapsucker. In point of fact, all of the work which the Nuthatch does on the trees is highly useful, since it

Drawing by R. I. Brasher

WHITE-BREASTED NUTHATCH (⅔ nat. size)

From daylight to dark, it busily creeps over trunks and branches of trees in search of insects for food

consists in ridding them of injurious insects and larvæ. For these it searches the crevices of the bark with its sharp bill. The bird also often forces into such crevices soft-shelled nuts, like the acorn or chestnut, sometimes for safe-keeping, or again in order to have them in a position in which it may break the shell with its comparatively weak bill. The notion that the Nuthatch can break the shells of hard nuts like the hickory-nut or the walnut, is, of course, an entirely mistaken one, and to that extent the bird's name is misleading.

The Nuthatch's "song" is a series of short notes resembling the syllables *too-too-too,* uttered most frequently in the mating season; but its more characteristic and common call note is a sharp and often-repeated single syllable, generally transliterated as *yank* or *ank,* and usually described as distinctly nasal. Other observers think, however, that this call sounds much more like the words "part" or "art," — at any rate the consonant "r" is distinctly audible in it. This note often is rapidly reiterated, so that the effect is a sort of chatter, which Dr. Chapman describes as "mirthless laughter."

One of the Nuthatch's most engaging qualities is his friendly curiosity. Stand or sit motionless near the base of a tree in which the bird is working, and he is almost certain to come hitching down the trunk, head foremost, to gaze squarely into your face with his beady little black eyes and inquire politely as to your health and whether all is as it should be with you. If you inform him quietly that you are very well and quite content with your lot (being careful meanwhile to make no movement of any kind), he will express his satisfaction courteously, apologize for being so tremendously busy, and whisk away to the next tree. GEORGE GLADDEN.

The White-breasted Nuthatch gets its living from the trunks and branches of trees, over which it creeps from daylight to dark. Insects and spiders constitute a little more than 50 per cent. of its food. The largest items of these are beetles, moths, and caterpillars, with ants and wasps. The animal food is all in the bird's favor except a few ladybird beetles. More than half of the vegetable food consists of mast — acorns and other nuts or large seeds. One-tenth of the food is grain, mostly waste corn. The Nuthatch does no known injury but much good.

Slightly varying forms of the White-breasted Nuthatch are: the Florida White-breasted Nuthatch (*Sitta carolinensis atkinsi*), found in Florida and along the Gulf coast to Mississippi; the Slender-billed Nuthatch (*Sitta carolinensis aculeata*) of the Pacific coast region from British Columbia to northern Lower California; and the Rocky Mountain, or Nelson's, Nuthatch (*Sitta carolinensis nelsoni*) which lives in the mountain districts of western United States and British Columbia and northern Mexico.

RED-BREASTED NUTHATCH

Sitta canadensis *Linnæus*

A. O. U. Number 728 See Color Plate 103

Other Names.— Red-bellied Nuthatch; Canada Nuthatch; Sapsucker (incorrect).

General Description.— Length, 4¾ inches. Upper parts, bluish-gray and black; under parts, white and reddish.

Color.— Crown, uniform black, with a faint bluish gloss; a *broad white stripe over the eyes* (extending from the sides of forehead to sides of nape, narrower anteriorly); below this *a black stripe* involving the lores and upper portion of ear regions and continued, more broadly, over sides of neck; back, shoulders, rump, middle tail-feathers, upper tail-coverts, wing-coverts, and inner wing-quills, uniform bluish-gray; secondaries and primaries, dull slate color, with gray edgings; tail-feathers (except middle pair), black tipped with gray, the two or three outermost with a band (usually interrupted) or spot of white, both the gray and white most extensive on lateral tail-feather; space under the eye and lower portion of ear regions and lower part of sides of neck, white; chin and upper throat, duller white, gradually deepening downward through pale buff on lower throat to *tawny-buff or reddish-brown* on flanks, anal region, and shorter under tail-coverts, the longer under tail-coverts paler buff or buffy white; iris, brown.

Nest and Eggs.— NEST: In holes of stumps or dead trees, preferably white birch or poplar, from 4 to 20 feet up; constructed of fine grass and pieces of pine bark. EGGS: 4 to 8, grayish-white, thinly or thickly spotted with red-brown around large end.

Distribution.— Forest districts of northern North America and higher mountains of United States; north to Labrador, Keewatin, Yukon district, and southern Alaska; breeding southward to Massachusetts, New York, Pennsylvania, northern Indiana, northern Illinois, central Iowa and along the higher Alleghenies to western North Carolina; in western United States breeding in spruce forests on higher mountains south to Colorado and the Sierra Nevada, in California; breeding also on Guadalupe Island, Lower California. In winter south to or near the Gulf coast and to New Mexico and Arizona, probably to northern Mexico.

The Red-breasted Nuthatch, as may be supposed, is distinguished from the White-breasted species by the different color of its under parts; other plumage peculiarities which may readily be distinguished are the characteristic black-and-white lines which run from the base of the bill to the back of the head, the eye being set in the center of the black streak and just touching the white one. The bird is also noticeably smaller than the White-breasted and prefers the conifers to the hardwood trees for feeding grounds.

The Red-breasted is perhaps even more active and restless than its larger relative, and rather less friendly in its habits, probably because it passes most of its life in the Canadian forests, and therefore sees comparatively little of human beings. Its call note is like that of the White-breasted, but usually is pitched several tones higher; and it has another note which resembles the syllable *hut*, and may be uttered in any of several different pitches.

This Nuthatch has a curious habit of placing a coating of fir balsam or pitch around the entrance to its nest.

BROWN-HEADED NUTHATCH

Sitta pusilla *Latham*

A. O. U. Number 729

General Description.— Length, 4½ inches. Upper parts, grayish-blue; under parts, white; head, brown.

Color.— Entire crown and lateral portions of hindneck, together with upper half of ear regions, plain light grayish-brown; central portion of hindneck white, forming a conspicuous spot; back, shoulders, rump, upper tail-coverts and lesser wing-coverts, uniform bluish-gray, the middle and greater wing-coverts, inner wing-quills, and middle pair of tail-feathers similar but less bluish-gray; secondaries and primaries dull or slate brownish, with pale gray edgings; tail (except middle pair of tail-feathers) black, the three outermost feathers broadly *tipped with gray*, the two outermost crossed by a band (incomplete) of white; sides of head, chin, and upper throat white; rest of under parts white, usually tinged with buff, passing into light bluish-gray on sides and flanks; iris, brown.

Nest and Eggs.— NEST: Excavated by the birds in dead stump or tree, from 1 to 40 feet up; made of small bits of grass, cotton, fine parts of pine needles,

wool, and feathers. Eggs: 5 or 6, dull white or creamy specked with shades of chestnut and lavender-gray.

Distribution.—Coast pine belt of southeastern United States, from southern Maryland and southern Delaware to Florida and eastern Texas northward; irregularly or casually, to New York, Ohio, southern Michigan, Missouri, Arkansas, and Bahamas.

All through the pine woods of the Southern States the Brown-headed Nuthatch is found. It is a diminutive bird, being much smaller than the

Photo by T. G. Pearson Courtesy of Nat. Asso. Aud. Soc.

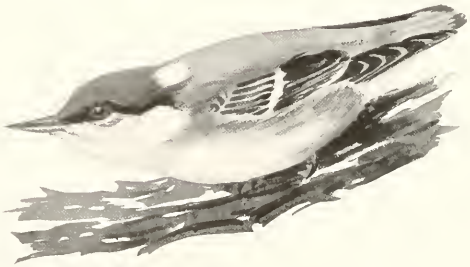
NEST OF BROWN-HEADED NUTHATCH

Florida

common and better-known White-breasted Nuthatch. Rarely is it ever seen out of the open pine woods. It does not have the habit of feeding along the boles of trees like the larger species just referred to, but confines its attention to such insects and their eggs as may be found along the higher branches or among the cones and terminal twigs. The birds usually travel in bands, which may possibly constitute the families of the previous year. In the spring until the young leave the nest rarely more than two are found together. Although very small, these birds possess wonderful power when it comes to excavating their nesting-holes in some rotten stump. Of the hundred or more nests that I have examined, few were more than twelve feet from the ground, although in rare instances they may be as high as forty feet. The entrance to the nest is rarely round like that of the Woodpecker, and sometimes when the wood is hard it looks more like a crack in the tree than like the entrance to a bird's nest. The hole is excavated to a depth of from five to eight inches, and is abundantly lined with soft materials of various kinds; among which one will usually find wings of the pine-tree seeds.

The bird possesses a characteristic, but not offensive, musk with which the entire nest is scented. By smelling in a hole suspected to be occupied by the Brown-headed Nuthatch, one can readily tell whether the bird has recently occupied it.

In Florida nest-building begins in March. These birds appear to have but few natural enemies, although on one occasion I remember looking into a nest that contained a snake, which I subsequently discovered had swallowed the female bird. T. Gilbert Pearson.



Drawing by R. I. Brasher

BROWN-HEADED NUTHATCH (¾ nat. size)

PYGMY NUTHATCH

Sitta pygmæa pygmæa *Vigors*

A. O. U. Number 730

General Description.— Length, 4½ inches. Upper parts, gray; under parts, white and buffy-white.

Color.— Crown and hindneck, plain light grayish-olive or olive-gray, the lower central portion of the latter with concealed portion of feathers, buffy white or pale buff; lores and space back of eyes, blackish or dusky; back, shoulders, wing-coverts (except primary coverts), inner wing-quills, rump, upper tail-coverts, and middle pair of tail-feathers, plain deep bluish-gray, the last with a conspicuous elongated patch of white; rest of tail, black, the three outermost feathers tipped with slate color (very broadly on outer one), the two outer, on each side, crossed, obliquely, by a broad bar or band of white; under the eye, lower half of ear regions, and cheeks, chin, and upper throat, white or buffy white; rest of under parts, dull buffy white, passing into pale bluish-gray on sides and flanks; iris, brown.

Nest and Eggs.— NEST: Behind bark crevices or in holes in trees, from 20 feet up, usually in coniferous wood and mountainous sections; constructed of feathers, plant down, bits of wool, and animal fur. EGGS: 6 to 9, crystal white, speckled with Indian red.

Distribution.— Mountains of western North America and Mexico, in coniferous forests; north to British Columbia (Vancouver Island and interior); south to southern Mexico; east to Montana, Wyoming, Colorado and New Mexico; casual in South Dakota and Nebraska.

If the Nuthatch is the small boy of the feathered tree-climbers, the Pygmy is the smallest and most boyish of the "gang." Gregarious and good-natured, he travels in small but noisy flocks through the woods, making a great disturbance over the business of getting something to eat, and enjoying life meanwhile. His companions may be Chickadees, other Nuthatches, Downies, Kinglets, or even Warblers, but he is always very much in evidence and has fully as much to say as any of his comrades. Sometimes he quarrels with the Bluebird when he finds that gentle spirit in possession of a nesting hole which he rather fancies, but generally he is eminently good-natured and not looking for trouble.

Pygmy has the upside-down habits of his immediate relatives, but in an even more pronounced form, and incidentally is more bob-tailed than they are. In fact, his tail is little more than an apology for a tail, and he is not in the least dependent upon it, whether he is going upstairs or down. Lacking this fulcrum he hasn't the carpentering ability of the Woodpeckers; but he isn't in the least averse to hammering, nevertheless, and for such a midget he can strike quite a formidable blow when he is really in earnest about it. Like his Red-breasted cousin he does most of his hunting in coniferous trees, and he conducts his search with much activity and perseverance, though it must be admitted that his operations seem rather hasty and haphazard. A Canadian observer reports that Pygmy has a curious habit of caulking with hair holes and seams around its nest, and sometimes for no apparent reason, since the caulking may serve no necessary or useful purpose.

The White-naped Nuthatch (*Sitta pygmæa leuconucha*) is larger than his congener, the Pygmy; especially is his bill of greater proportions. The white spot on the back of the neck is larger; the gray of the head grayer; gray of the back less bluish; and the under parts less strongly buff. He is found from San Diego county, California, south to San Pedro Martir Mountains, Lower California.

Drawing by R. Bruce Horsfall

PYGMY NUTHATCH (¾ nat. size)

TITMICE

Order *Passeres;* suborder *Oscines;* family *Paridæ*

THE Titmouse family, which includes the birds of that name, the Chickadees the Bush-Tits, and the Verdins, comprises several species of small birds, classified by systematic ornithologists as "song birds" (*Oscines*), not necessarily because they can sing, but because they have well-developed vocal organs.

The present group have short cone-shaped bills, and obtuse tongues armed at the tip with horny bristles. Wings are well developed and rounded, the tail is usually about as long as the wing and slightly rounded, and the feathers are softer than the stiffened ones of Thrushes and Kinglets. They inhabit the northern hemisphere generally, and chiefly are arboreal, omnivorous, very active, and essentially non-migratory. They are far better represented in the Old World than in the New. North America, including Mexico, possesses less than 30 species and subspecies, and but four genera, while about 70 species and at least five genera belong to Arctic, Indian, and African regions.

The plumage of the members of this family is never spotted, streaked, or barred; plain colors are the rule — grays, browns, and olives for the upper parts and dull white and grays for the under parts. The Titmice may or may not have black on their heads; the Chickadees always have the crown and hindneck uniform black or brown; the adult Verdins have yellow heads; and the Bush-Tits sometimes have the sides of their heads black and, if the general color of their upper parts is gray, their crowns are generally brownish, and if the general color is olive, their crowns are gray. The Titmice are crested, but the other members of the family lack this adornment.

Birds of the Titmouse family, though insignificant in size, are far from being so in the matter of food habits. What they lack in size of body they more than make up in number of individuals. The character of the food of Titmice gives a peculiar value to their services, for it consists largely of the small insects and their eggs that wholly escape the search of larger birds. Throughout the year most of the species of this group remain on their range, so that they are constantly engaged in their beneficial work, continuing it in winter when the majority of their co-workers have sought a milder clime. It is at this season that the Titmice do their greatest good; for, when flying and crawling insects are no more to be found, the birds must feed upon such species as they find hibernating in crevices, or upon the eggs of insects laid in similar places.

TUFTED TITMOUSE

Bæolophus bicolor (*Linnæus*)

A. O. U. Number 731 See Color Plate 103

Other Names.— Tufted Tit; Tufted Chickadee; Crested Titmouse; Peto Bird; Crested Tomtit.

General Description.— Length, 6 inches. Upper parts, slate-gray; under parts, white and reddish. Bill, short and stout; wings, long and rounded; tail, shorter than wing, slightly rounded; head, with crest.

Color.— Forehead, black or sooty black, margined posteriorly with sooty brown; rest of *upper parts, plain slate-gray;* eye region, dull white; ear region, pale gray; cheek region and under parts, dull white, passing on *sides and flanks into light cinnamon-rufous;* iris, brown.

Nest and Eggs.— NEST: Usually in deserted Woodpecker holes or hollow stumps; a collection of moss, leaves, bark strips, and horse- and cattle-hair. EGGS: From 5 to 8, white, thickly spotted with reddish-brown.

Distribution.— Eastern United States; north, regularly, to southern Pennsylvania and New Jersey, central Ohio, northern Indiana, northern Illinois, southern Iowa, and northeastern Nebraska; irregularly or casually to Connecticut, southern New York (Long Island, Staten Island) extreme northern portions of Indiana and Illinois, and southern Minnesota; west to eastern portion of the Great Plains; south to the Gulf coast, including south-central Florida and eastern and central Texas.

The Tufted Titmouse is more common in the South and West than his cousin, the Chickadee, and he is one of the prettiest of the family. He is dressed in soft gray, with a fine, showy, pointed crest. His ways are something like the Chickadee's, but he is, perhaps, even bolder and more pert, and he is easily tamed. All his notes are loud and clear, and he is never for a moment still.

In winter, this bird is found in little flocks of a dozen or more. These are probably all of one family, the parents and their two broods of the year. He is one of the birds who stores up food for a time when food is scarce. In summer, he eats only insects.

The Tufted Titmouse, like others of his race, has a great deal of curiosity. I have heard of one who came into a house through an open window. It was a female Titmouse in search of a good place for a nest. After she had been in all the rooms, and helped herself to whatever she found that was good to eat, she seemed to decide that it was a land of plenty and she would stay.

Drawing by R. Bruce Horsfall

TUFTED TITMOUSE (¾ nat. size)

A gray-feathered bit of curiosity

The stranger settled upon a hanging basket as nice to build in. The family did not disturb her, and she brought in her materials and made

Photo by S. A. Lottridge

NEST AND EGGS OF TUFTED TITMOUSE

A section of the stub has been removed

her nest. She had even laid two or three eggs, when the people began to take too much interest in her affairs, and the bird thought it best to move to a safer place.

Another of these birds, in Ohio, looking about for something nice and soft to line her nest, pitched upon a gentleman's hair. Unfortunately, he had need of the hair himself; but the saucy little Titmouse didn't mind that. She alighted on his head, seized a beakful, and then bracing herself on her stout little legs, she actually jerked out the lock, and flew away with it. So well did she like it that she came back for more. The gentleman was a bird lover, and was pleased to give some of his hair to such a brave little creature. OLIVE THORNE MILLER.

The characteristic call note of this Titmouse is a two-syllabled, whistled utterance, quite melodious, and sometimes repeated twice, three, or even four, times. To some ears the syllables sound like *peto*, to others more like *tur-ve*, the accent always being on the first syllable. Another single note, less frequently heard, is much like the autumn note of the Bluebird.

BLACK-CRESTED TITMOUSE

Bæolophus atricristatus atricristatus (*Cassin*)

A. O. U. Number 732

General Description.— Length, 6 inches. Upper parts, gray; under parts, grayish-white. Bill, short and stout; wings, long and rounded; tail, shorter than wing, slightly rounded; head, with crest.

Color.— *Forehead, dull white,* sometimes faintly tinged with brown; rest of crown, including crest, black, sharply defined against whitish of forehead; rest of upper parts, including edges of back of head and the region over eye, plain gray, strongly washed with olive, except over the eye where the gray is paler, gradually fading into still paler gray on ear region and sides of neck, and this fading into white or grayish white on cheek region; under parts, grayish-white becoming clearer buffy-white posteriorly, the sides and flanks, pale cinnamon-rufous; iris, brown.

Nest and Eggs.— Nest: In hollows of trees, old Woodpecker holes, or deep cracks of tree trunks; composed of grasses, fine inner bark, feathers, moss, and wool, and usually pieces of snake skin. Eggs: 5 or 6, clear white with small chestnut spots sparingly scattered over entire surface.

Distribution.— Rio Grande valley, and Mexican States of Coahuila, Nuevo Leon, Tamaulipas, San Luis Potosi, and Vera Cruz (highlands).

The Black-crested Titmouse is one of the many birds that lurk chiefly near the southwestern border, and remain unknown to American observers except the comparatively few who see them in that region.

The sharply-defined, black crest gives the bird a clever and rather dandified appearance, and he has the lively manner and cheerful disposition of his well-loved relative, the Chickadee of the Eastern States. The bird occurs very commonly in the Chisos and Davis mountains.

Sennett's Titmouse (*Bæolophus atricristatus sennetti*) is very similar to the Black-crested; he is decidedly larger and his upper parts are much clearer gray with very little, if any, of the olive tinge. He lives in central Texas.

BRIDLED TITMOUSE

Bæolophus wollweberi (*Bonaparte*)

A. O. U. Number 734

Other Name.— Wollweber's Titmouse.

General Description.— Length, 5 inches. Upper parts, deep olive-gray and black; under parts, pale olive-gray and black. Bill, short and stout; wings, long and rounded; tail, shorter than wing, slightly rounded; head, with crest.

Color.— Crown, including crest, black, with a large central patch of deep gray covering whole crown; over the eyes a broad and sharply defined stripe of white extending posteriorly to beneath hind part of crest, where it joins with a broad white band across side of neck; back of the eye a streak of black, broader posteriorly, where it joins with a black band across terminal portion of ear region; rest of ear region, together with the cheek, white; a black spot or short streak at front angle of eye; chin and throat, uniform black, forming a conspicuous patch with sharply defined rear outline; upper parts (except as described), plain deep olive-gray, more strongly tinged with olive posteriorly; under parts of body, pale olive-gray, passing into pale olive-buffy on abdomen and under tail-coverts; iris, brown.

Nest and Eggs.— Nest: In natural tree cavities, three to six feet up; composed of cottonwood down and fern fronds. Eggs: 5 to 7, plain white.

Distribution.— Mountains of southern Arizona and southern New Mexico and south through Mexico to Guerrero, Oaxaca, and Vera Cruz.

The Bridled Titmouse differs radically in appearance from the Black-crest, and notably in the curious markings about the head and throat, which suggest a bridle. In manners and habits however, and especially in gregariousness (excepting during the breeding season), it resembles the other members of its family, though the little companies of twenty or more are less noisy and perhaps less playful than their cousins, the Chickadees.

Drawing by R. L. Brasher

BRIDLED TITMOUSE (nat. size)

The curious markings about its throat suggest its name

CHICKADEE

Penthestes atricapillus atricapillus (*Linnæus*)

A. O. U. Number 735. See Color Plate 103

Other Names.— Common Chickadee; Eastern Chickadee; Black-capped Chickadee; Black-capped Titmouse; Black-capped Tit.

General Description.— Length, 5¾ inches. Upper parts, gray and black; under parts, white and black. No crest; bill, shorter than head; wings, long and rounded; tail, shorter than wing, slightly rounded.

Color.— Entire crown and hindneck (except lateral portion of the latter) uniform deep black; back, shoulders, middle and lesser wing-coverts, plain olive-gray, passing into more buffy gray on rump and upper tail-coverts; wings and tail, dusky slate color; greater wing-coverts and secondaries, broadly edged with pale gray or grayish-white; tail-feathers edged with olive-gray, these edgings becoming white on outermost feathers; chin and whole throat, black; sides of head and neck, white; under parts of body, white, the sides and flanks tinged with buff; iris, brown.

Nest and Eggs.— NEST: In deserted Woodpecker holes, natural cavities, old stumps (preferably white birch), or fence posts; such openings are filled with leaves, moss, grasses, snugly lined with hair, fur from small animals, and feathers. EGGS: 4 to 8, white, spotted with chestnut and lilac-gray.

Distribution.— Eastern North America; north to Newfoundland, Quebec, Ontario, and southern Keewatin; south regularly, to about latitude 40°, in New Jersey, Pennsylvania, Ohio, northern Indiana, northern Illinois, Iowa, etc., in Allegheny Mountains to North Carolina (in spruce belt); irregularly (in winter) to northern Virginia, Kentucky, southern Illinois, Missouri, etc.

In winter especially, the Chickadee is the feathered small boy of the woods. Like the Nuthatches and the Kinglets, frequently his companions, the Chickadee seems actually to enjoy a snowstorm, and announces the fact by language and actions the meaning of which are

Drawing by R. I. Brasher

CHICKADEE (⅔ nat. size)

The feathered small boy of the winter-time — always in fine spirits

unmistakable. In the bitterest weather he frolics and frisks from tree to tree, happy and care-free, laughing and joking. Mr. Burroughs says that "the Chickadee has a voice full of unspeakable tenderness and fidelity," which is very faithful to the spirit of the utterance from which the bird is named. This call is often abbreviated by the omission of the first two syllables, but the resulting *dee, dee, dee*, is a very sweet and pleasing little greeting.

Many persons who are familiar with this call are unaware that the Chickadee has two other vocal performances which are widely different from it. One is composed of two notes, and is most frequently heard in the spring; the other involves three notes, and may be heard in the spring or fall. The notes of both are whistled, and their quality is, therefore, very different from that of the characteristic call. By some ornithologists these notes are considered song-like rather than call-like, though it might be difficult to establish this distinction. At any rate, the two-note utterance suggests the characteristic little sigh of the Phœbe, from which, however, it differs in that the tones are purer and sweeter, are more deliberately executed, and are cheerful and hopeful rather than somewhat plaintive.

The three-note group is less frequently heard, but generally is much the more musical and beautiful of the two expressions. Curiously enough these notes reproduce almost exactly the last three notes of the phrase to which are set the words "I'm coming back to you," in the so-called Hawaiian love song "Yakahula." Of course this is a pure coincidence, as is the reproduction by the Wood Thrush of the opening phrase of Faust's "Garden Song to Marguerite." The singularly sweet quality and bell-like resonance of these notes combine to make them almost startlingly beautiful when they are sounded suddenly in the listening silence of a deep forest.

Any one who has a musical ear, and can whistle in a high key, can easily imitate these songs; and, if he will sit still as he does so, he is likely to have the pleasure of bringing the birds to within a few feet of him. Indeed, the Chickadee is one of the most trustful of birds, and by the exercise of a little patience one may often induce the little fellow to take food from the hand or even from between the lips.

While incubating, the Chickadee has an amusing way of trying to frighten away intruders. Mr. Burroughs records the following instance of that performance: "One day a lot of Vassar girls came to visit me and I led them

Photo by A. A. Allen

CHICKADEE

At its nest hole in a sumach stub

out to the little sassafras to see the Chickadee's nest. The sitting bird kept her place as head after head, with its nodding plumes of millinery, appeared above the opening of her chamber, and a pair of inquisitive eyes peered down upon her. But I saw she was getting ready to play her

little trick to frighten them away. Presently I heard a faint explosion at the bottom of the cavity, when the peeping girl jerked her head quickly back, with the exclamation, 'Why, it spit at me!' The trick of this bird on such occasions is apparently to draw in its breath till its form perceptibly swells, and then give forth a quick, explosive sound, like an escaping jet of steam. One involuntarily closes his eyes and jerks back his head." (*Far and Near.*)

Like the Nuthatches and a few other birds, the Chickadee doesn't seem in the least to mind being upside down. While searching for insects and larvæ he is frequently seen clinging to a twig in a completely reversed position, in which he seems to be entirely at ease. He also often alights on the side of a perpendicular limb, or trunk of a tree, after the manner of the Woodpeckers, in order to search the crevices of the bark for insects. But he does not attempt to climb up or down as the Woodpeckers and Nuthatches so readily do; and it is noticeable that his position is usually at an angle with the perpendicular, this in consequence of his not having either feet or a tail adapted for climbing.

GEORGE GLADDEN.

Examination of 289 stomachs of this Chickadee shows that its food consists of 68 per cent. animal matter (insects) and 32 per cent. vegetable matter. The former is made up of small caterpillars and moths and their eggs. Prominent among the latter are the eggs of the tent-caterpillar moths, both the orchard and forest species. As these are two of our most destructive insects, the good done by the Chickadee in devouring their eggs needs no comment. During the winter the Chickadee's food is made up of larvæ, chrysalids, and eggs of moths, varied by a few seeds; but as spring brings out hordes of flying, crawling, and jumping insects, the bird varies its diet by taking also some of these. Among the bugs may be mentioned the plant lice and their eggs, which are eaten in winter. The beetles taken nearly all belong to the group of snout beetles, more commonly known as weevils, and nearly all are known to the farmer or fruit raiser as pests; the plum curculio and the cotton-boll weevil may be taken as fair examples. Spiders constitute an important element of the food and are eaten at all times of the year, the birds locating them when they are hibernating in winter as well as when they are active in summer. The vegetable food of the Chickadee consists largely of small seeds, except in summer, when they are replaced by pulp of wild fruit.

In western North America are three variant forms of the Common Chickadee. The Long-tailed Chickadee (*Penthestes atricapillus septentrionalis*) breeds from Alaska, central Mackenzie, and southwestern Keewatin south to New Mexico and eastern Kansas and from eastern Oregon east to western Minnesota and western Iowa. In winter it is found south as far as central Texas. It is larger than the Eastern Chickadee and its plumage is paler, with the white edgings on the wing and tail-feathers broader and more conspicuous.

Photo by Harriet S. Rider Courtesy of Nat. Asso. Aud. Soc.

THE BIRDS' CHRISTMAS TREE

Receives a visit from a Chickadee

The Oregon Chickadee (*Penthestes atricapillus occidentalis*) is smaller and darker than the eastern Chickadee, its back varying in color from deep mouse-gray to deep hair-brown or light olive, and the white edgings of tail and wing feathers more restricted. It is found in the Pacific coast district from the Columbia River to British Columbia.

The Yukon Chickadee (*Penthestes atricapillus turneri*) is found in Alaska, north and west of Cook Inlet. It most resembles the Long-tailed Chickadee. It is slightly smaller, with coloration

grayer above and the under parts and white edgings of feathers more purely white.

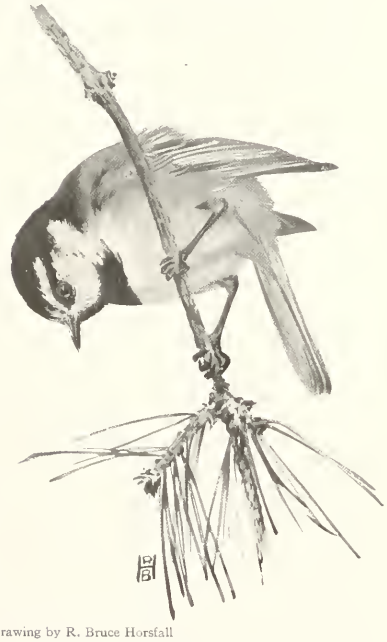
The Carolina or Southern Chickadee (*Penthestes carolinensis carolinensis*) and its variants, the Plumbeous, or Texan, Chickadee (*Penthestes carolinensis agilis*) and the Florida Chickadee (*Penthestes carolinensis impiger*), are smaller than the Black-capped Chickadee, with relatively shorter tails and larger bills, with little, if any, white on wings and tails, and with the black throat-patch abruptly defined posteriorly. They are found in the southeastern United States east to eastern Texas, and north to Indiana, Ohio, Pennsylvania, and New Jersey.

MOUNTAIN CHICKADEE

Penthestes gambeli gambeli (*Ridgway*)

A. O. U. Number 738

General Description.— Length, 5¾ inches. Upper parts, olive-gray; under parts, black and white. No crest; bill, shorter than head; wings, long and rounded; tail, shorter than wing, slightly rounded.



Drawing by R. Bruce Horsfall

MOUNTAIN CHICKADEE (⅞ nat. size)

Its call has an accent of good cheer and tenderness

Color.— Crown and hindneck, uniform black, with a faint bluish gloss; *over the eyes a white stripe;* cheeks, chin, throat, and upper chest, uniform deep black, very sharply defined posteriorly; sides of head and neck between the two black areas, white; back, shoulders, lesser wing-coverts, rump, and upper tail-coverts, plain olive-gray or mouse gray, the rump more strongly tinged with olive; wings and tail, dull slate color with gray edgings; sides and flanks (broadly) and under tail-coverts, olive-gray (paler and more tinged with olive than back); center of lower chest, breast, and abdomen, white; iris, brown.

Nest and Eggs.— Nest: In natural cavity or a deserted Woodpecker hole, from 2 to 20 feet up; made of grasses, rootlets, sheep's wool, cattle hair and, very frequently, rabbits' fur. Eggs: 5 to 9, plain white unmarked or spotted with reddish-brown.

Distribution.— Mountains of western United States, from the Rocky Mountains to the coast ranges; north to British Columbia, northern Idaho, Montana, etc., south to western Texas, New Mexico, Arizona, and northern Lower California.

The Mountain Chickadee of the West is a shade larger, and of slightly different coloration than its well beloved eastern relative, but in habits and disposition the birds are very similar. The western bird moves in short, fluttering flights from tree to tree, is much given to clinging to twigs upside down, and shows the same friendly curiosity about human loiterers in his neighborhood that is characteristic of his eastern cousin; and his call, though somewhat different in the arrangement and quality of its syllables, has the same accent of combined good cheer and tenderness. It is in the coniferous regions of the mountains that he is found.

ACADIAN CHICKADEE

Penthestes hudsonicus littoralis (*H. Bryant*)

A. O. U. Number 740a. See Color Plate 10.

General Description.— Length, 5½ inches. Upper parts, brown; under parts, black, white, and reddish. No crest; bill, shorter than head; wings, long and rounded; tail, shorter than wing, slightly rounded.

Color.— Crown and hindneck, plain, soft *grayish-brown*, back, shoulders, lesser wing-coverts, rump, and upper tail-coverts, *brown*, wings and tail, dull slate color with slate-gray edgings; mouth and eye regions, white, gradually shading into pale gray on ear region and this into clear gray or olive-gray on sides of neck; cheek region, chin, and throat, uniform sooty black; under parts of body, white medially, the sides of chest shaded with gray, the *sides and flanks, cinnamon-brown;* iris, brown.

Nest and Eggs.— Nest: In natural cavities in trees or stumps; constructed of moss and fur. Eggs: 6 or 7, indistinguishable from those of common Chickadee.

Distribution.— Southeastern British provinces and extreme northeastern United States, Maine, mountains of New Hampshire, Vermont, and northeastern New York; casually or irregularly southward to Massachusetts, Rhode Island and Connecticut.

The gray-brown cap, brownish back, and reddish sides of this little denizen of the northland, distinguish him sharply from his essentially black-and-white, livelier, and more ubiquitous cousin, the Common Chickadee, but in general the manners of the two birds are not markedly dissimilar. Naturally enough, different observers give different renderings of the bird's call notes. One (Wright) speaks of its "sweet warbling song," while another (Brewster) has heard only "low, chattering conversational sounds, a low chip much like that of the Common Chickadee," and "an abrupt, explosive, *tch-tchip*, and a nasal drawling *tchick, chee-day-day*," which he thinks is easily distinguishable from the familiar call of the Common Chickadee.

The records show a remarkable flight of this bird into the southern New England States in the winter of 1914–15. Why the flight, no one seems to have explained clearly, but it has been conjectured that it may have been due to the injury done by insects in northern Maine and New Brunswick to the spruce forests which furnish a large part of the bird's normal food supply. At any rate, the Acadian Chickadees became comparatively common that year in eastern Massachusetts where they do not usually appear in such numbers. They were seen in the company of Golden-crowned Kinglets, Fox Sparrows, and other Chickadees, and it was noticed that they fed freely upon the seeds of the goldenrod and upon the berries of the red cedar; also that they did not expose themselves much.

Evidently there was a flight somewhat similar to this in the winter of 1913–14, and of this we have an account in the *Auk* from a correspondent in Watch Hill, R. I., which seems worth quoting in part. "As this was the second record of this species in the State," he writes, "and there was what might almost be called a

Courtesy of Am. Mus. Nat. Hist.

ACADIAN CHICKADEE (⅔ nat. size)

flight for a so rare a bird, I tried to collect one with a cap and golf sticks, but was unsuccessful, succeeding merely in getting very close."

The Hudsonian Chickadee (*Penthestes hudsonicus hudsonicus*) is larger than the Acadian and its upper parts are slightly grayer. It is found in northern North America, breeding from Alaska and the tree-limit in central Mackenzie and central Keewatin south to southern British Columbia, central Alberta (usually Montana), northern Manitoba, central Ontario, and Ungava; sometimes in the winter it wanders as far south as northern Illinois.

Another subspecies is the so-called Labrador Brown-capped Chickadee (*Penthestes hudsonicus nigricans*) of which there was an interesting southward flight in the winter of 1916–17, as far as Staten Island, N. Y.

CHESTNUT-BACKED CHICKADEE

Penthestes rufescens rufescens (*J. K. Townsend*)

A. O. U. Number 741

General Description.— Length, 5 inches. Upper parts, brown; under parts, brown and white. No crest; bill, shorter than head; wings, long and rounded; tail, shorter than wing, slightly rounded.

Color.—Crown and hindneck, plain sepia brown, becoming darker along lateral margin; *back, shoulders, and rump, plain chestnut;* upper tail-coverts and lesser wing-coverts, brownish-gray or hair brown; wings and tail, deep brownish-gray with paler gray edgings, these broader and paler (sometimes nearly white) on inner wing-quills and terminal portion of greater wing-coverts; cheek region, chin, throat, and upper part of chest, uniform dark sooty-brown, abruptly defined posteriorly; sides and flanks, chestnut; under parts of body otherwise, white; under tail-coverts tinged with brown; iris, brown.

Nest and Eggs.— Nest: In a dead stump from 12 to 40 feet up; lined with hair, fur, feathers, and moss. Eggs: 5 to 7, white, usually unmarked, but sometimes minutely specked or spotted with chestnut or reddish.

Distribution.— Pacific coast district, from northern California to Prince William Sound and head of Lynn Canal, Alaska; east to Montana.

Titmice personify inquisitiveness. They are feathered interrogation points; prying into each hole, crack, and cranny; interviewing and questioning every passer-by. In this respect the Chestnut-backed Chickadee is typical of the Titmouse family, but why is it colored so differently from other Chickadees which inhabit the same region? Here is a question for future ornithologists to answer.

This sprightly, cheerful little acrobat of the trees is common in some of the timberlands of the Northwest; but is not by any means confined to them, as, like other Titmice, it visits the homes of man and is as fearless as the common Chickadee. Nevertheless, the great coniferous forests of the humid Pacific coast region seem to be its favorite hunting grounds; and there, far up amid the foliage of tall pines, firs, and cedars that tower toward the sky, it flutters, turns, pries, creeps, and clings, searching out destructive insect enemies of its sheltering friends, the trees.

Often invisible by reason of the dense greenery, its cheery notes are the only indications of its presence that are perceptible to the foot passengers in the shades below. As a matter of course, it is seen more commonly in open deciduous woods. It is by no means averse to settled regions, and may be found along roadways and even in orchards and shade trees.

The old nursery rime, "Little Tommy Tittlemouse, lives in a little house," applies perfectly to this species; for its snug domicile in the hollow of a tree has doorway, floor, and roof and is carpeted or lined with a felting of hair, fur, wool, or feathers. It is a safe, comfortable little house quite sufficient for the owner's simple needs. Moreover this Chickadee nests in bird houses put up for other birds and the habit grows.

While the young are in the nest the parents work with tireless industry; searching bark, leaf, and twig for insects with which to fill the many little gaping, hungry mouths protruding upward from the well-filled nest. In the search for food the parents are constantly on the move; swinging, twisting, hanging, fluttering, climbing, and even turning an occasional half-somersault in air when pursuing some winged insect that seeks safety in precipitate erratic flight. The Chickadee views the world from all angles, and is quite as much at home wrong side up as right side up. It plays a continual game of hide and seek or "tag, you're it," which it seems to delight in, but it is played mostly in the line of business — the serious business of getting a living.

When the young are fledged and able to fly they are near replicas of the parents, but somewhat abbreviated and even more fluffy. Away they all go, fluttering and scampering through the labyrinth of coniferous branches, often in company with Golden-crowned Kinglets, Oregon Chickadees, Mountain Chickadees, Creepers, or Warblers. When winter winds rage over the forests, when rain and snow storm into their fastnesses, the Chickadees pack their little stomachs well with insects' eggs, pupæ, or seeds and hie themselves to some snug sheltered refuge in the trees where, warm and dry, they sleep away the long winter nights.

Edward Howe Forbush.

The California, or Nicasio, Chickadee (*Penthestes rufescens neglectus*) and Barlow's Chickadee (*Penthestes rufescens barlowi*) are geographical varieties of the Chestnut-backed. They are found in central California in the coast district. The California has less chestnut on its sides and flanks, which exteriorly are pale gray. The Barlow's has the sides and flanks entirely pale gray.

BUSH-TIT

Psaltriparus minimus minimus (*J. K. Townsend*)

A. O. U. Number 743

General Description.—Length, 4¼ inches. Upper parts, gray; under parts, brownish-white. Bill, very small, deeper than broad; wings, long and pointed; tail, longer than wing, much rounded, the feathers narrow but with the tips broad and rounded.

Color.—Crown and hindneck, plain, warm brown or drab; back, shoulders, lesser wing-coverts, rump, and upper tail-coverts, plain deep smoke gray; wings (except lesser coverts) and tail, darker gray (dull slate color) with pale gray edgings; sides of head similar in color to crown but much paler and duller; under parts, dull brownish-white, deepening on sides and flanks into pale, dull ecru-drab; iris, light yellow.

Nest and Eggs.—NEST: Placed in low oaks, in bunch of mistletoe or mesquite from 5 to 20 feet up, a long gourd-shaped structure, flaring at bottom, entrance near top on side; not strictly pensile, being fastened to a number of twigs along sides; from eight to ten inches long and four or five in diameter, the walls three times as thick at bottom as at top, where about one-half inch through; constructed exteriorly of dry sage leaves, plant down, moss, lichens, and cobwebs, thickly lined with smaller feathers. EGGS: 4 to 6, pure white.

Distribution.—West slope of coast mountains in Oregon, California, and northern Lower California, north to the Columbia River, south to Nachoguero valley, Lower California (also to San Pedro Martir Mountains, and San Fernando?).

One can hardly help falling in love with the Bush-Tit. He is such a tiny bird, not larger than your thumb. He goes along in such a bustling, business-like way. He is quite fearless. One can make friends with the Bush-Tit as easily as with his cousin, the Chickadee. Any one who has studied bird character would know that the two are related even if he did not know that both are members of the Titmouse family.

The Bush-Tit builds a real bird mansion, a long, gourd-shaped home from eight to ten inches or even longer, with a round entrance at the upper end. I once watched a pair of these birds lay the foundation for a typical long pocket-nest. I say "lay the foundation," but really the Bush-Tit does not follow our ideas of architecture, for he builds from the top down. This pair began making a roof to the home, then a round doorway, and next they began weaving the walls of moss, fibers, and lichens. From the

Drawing by R. I. Brasher

BUSH-TIT (nat. size)

A fearless little mite, no bigger than your thumb

doorway, there was a sort of a hall down to the main living-room. This was warmly lined with feathers. To make a soft feather lining required a good deal of hunting. The feather lining was not really completed till after the eggs were laid. Whenever one of the Bush-Tits would come upon a feather, he would pick it up and bring it home. The Bush-Tits reminded me of some people who build a house, but are not able to furnish it throughout, so they pick up the furnishings later on from time to time.

In some parts of Oregon where moss hangs in long bunches from the limbs, the Bush-Tit uses this natural beginning for a nest. I saw one of these birds build its home by getting inside of a long piece of moss and weave this into the wall of the nest. At another time, I saw a Bush-Tit's nest twenty inches long. The little weavers had started their home on a limb and it was evidently not low enough to suit them, for they made a fiber strap ten inches long and then swung their gourd-shaped nest to that, letting the nest hang in a bunch of willow leaves.

I never had had a good idea of the amount of insect food a Bush-Tit consumed until I watched a pair of these birds a few days after the eggs were hatched. Both birds fed in turn and the turns averaged from five to ten minutes apart. The parents were busy from dawn till dark. They searched the leaves and twigs, branches, and trunks of every tree. They hunted through the bushes, grasses, and ferns. They brought caterpillars, moths, daddy-long-legs, spiders, plant lice, and many other kinds of insects. One pair of Bush-Tits about a locality means the destruction of a great many harmful insects. If we could but estimate the amount of insects destroyed by all the birds about any one locality, we should find it enormous. Without the help of these assistant gardeners, the bushes and trees would soon be leafless.

WILLIAM L. FINLEY.

VERDIN

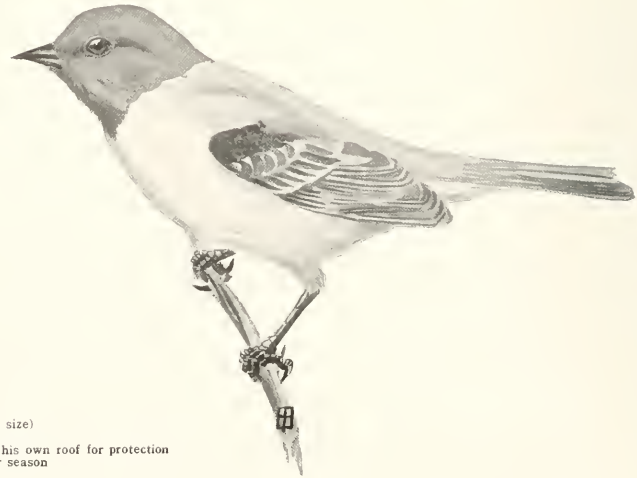
Auriparus flaviceps flaviceps (*Sundevall*)

A. O. U. Number 746

Other Names.— Gold-Tit; Yellow-headed Bush-Tit.

General Description.— Length, 4½ inches. Head, yellow; upper parts, brownish-gray; under parts, pale brownish-gray and white. Bill, much shorter than head, conical, and tip acute; wings, long and rounded; tail, nearly as long as wing, rounded.

Color.— ADULTS: Head, dull gamboge or wax-yellow, clearer yellow on cheeks, chin, and throat (where the yellow sometimes extends over upper chest), more olivaceous on crown and back of head, the back portion of forehead sometimes tinged with orange-rufous (rarely with a distinct though partially concealed



Drawing by R. I. Brasher

VERDIN (nat. size)

A tiny fellow who has learned to use his own roof for protection during the winter season

spot of this color); hindneck, back, shoulders, rump, and upper tail-coverts, plain brownish-gray (between smoke-gray and hair-brown), the rump usually tinged with yellowish olive; wings and tail, decidedly darker with pale brownish-gray or grayish-brown edgings, the lesser wing-coverts, uniform bright reddish-chestnut or bay; under parts of body, pale brownish-gray, becoming nearly white on lower abdomen and under tail-coverts. YOUNG: Essentially similar to adults, but without yellow on head or chestnut on lesser wing-coverts, which are of the same color with the back.

Nest and Eggs.— NEST: At end of branch of thorny trees or bushes, in brushy valleys of high dry country away from timber and among the desert thickets; a remarkable large retort-shaped structure with small round entrance on one side, composed exteriorly of thorny twigs and leaf and flower stems, closely interwoven, and lined with feathers. EGGS: 3 to 6, bluish or greenish white, speckled with reddish-brown, heaviest at large end.

Distribution.— Southern Texas, New Mexico, Arizona, southwestern Utah, southern Nevada, and southern California, northern Lower California, and Mexico.

One day, while we were passing a little gully west of Tucson, Arizona, I saw what looked to be a small bunch of grass or roots caught on the bare limb of a cat's-claw. It looked like a piece of drift caught by the high water. Out of curiosity, I went closer and found a small round hole in the side. In a few minutes, here came a tiny olive-gray bird, yellow on the neck and head and a chestnut patch on the shoulder. He was about the size of a Chickadee and I could tell he was a cousin of the Chickadee by his actions. This was our introduction to the Verdin.

I was not accustomed to seeing a nest hung out on a plain bare branch with not a leaf to hide it. When I looked about, I saw that the Verdin didn't have much choice for a nest-site, for there was nothing for a mile around except cactus, creosote, and cat's-claw. The best a Verdin can do for self-protection is to make her home look like a little bundle of drift, roof the house with thorns and make the doorway on the under side. I had to look all around before I discovered this doorway.

Photo by W. L. Finley and H. T. Bohlman

VERDIN, NEST, AND YOUNG

The nest was hung out on a plain bare branch with not a leaf to hide it

This bird, which I took to be the female, had a morsel in her bill. She hopped into the house and was out again and off on the hunt, paying no attention to us. We sat down about fifteen feet away. In a few moments, the male Verdin came headlong with a mouthful of green measuring-worms. He brought up with a surprised jerk and fidgeted as if he didn't know just what to do. He was evidently saying to himself, "Who are they? What do they want?" He came to the conclusion he would fool us, so he

Drawing by R. I. Brasher

WREN-TIT (¼ nat. size)

Prudent to the point of secretiveness

swallowed the bite and went hunting through an adjoining bush to show us that he was merely skirmishing to appease his own appetite and that he had neither nest nor children.

When we first found the Verdin's nest, the doorway was a round hole in the side. By getting the light just right, we could look inside. A week later when we visited the same home, we were surprised not to see the door at all. The birds evidently thought we had been too curious, so they built a little roof and porch, sloping it out and straight down, so that I had to get down on my hands and knees to look up to find the doorway, for the entrance was now in the bottom.

The Verdin makes use of his home not only during the summer to raise a family, but he often uses it in winter as a sleeping place. Many birds abandon the nest as soon as the children leave home and it then falls to ruin. Not so with the Verdin; he keeps his in repair. He is such a tiny fellow, he needs a protected place for sleep. So he has learned to use his own roof during the winter season. WILLIAM L. FINLEY.

WREN-TITS

Order *Passeres;* suborder *Oscines;* family *Chamæidæ*

ALTHOUGH the characters of the single genus which constitutes the family of Wren-Tits are in the main intermediate between those of the Titmice family and those of the Wren family, they are not all so, and there can be no question, says Robert Ridgway, that it is an isolated type and should be regarded as a distinct family.

The chief anatomical characteristics of the Wren-Tits are: bill much shorter than the head, compressed, and strongly curved above; well-developed bristles at the corners of the mouth; the feathers of the neck and chin terminated by distinct though fine bristles; wings rather short and much rounded; tail, much longer than wing, graduated for nearly one half its length, the feathers rather narrow, but gradually widening to the tip, which is rounded. They are found in the Pacific coast district from Oregon south to northern Lower California and east to the interior of California.

WREN-TIT

Chamæa fasciata fasciata (*Gambel*)

A. O. U. Number 742

General Description.—Length, 7 inches. Upper parts, brownish-olive; under parts, pale buffy-cinnamon.

Color.—Above, plain brownish-olive, the crown, hindneck, wing and tail feathers slightly grayer, sides of head and neck, paler grayish-olive than crown and hindneck; under parts, pale buffy-cinnamon deepening into drab or buffy-drab on sides, flanks, and under tail-coverts; iris, white.

Nest and Eggs.—NEST: In low bushes, seldom more than 4 feet up, compactly put together with thick walls; constructed of fine strips of bark, roots, grasses, and lined with horse hair or cattle hair. EGGS: 3 to 5, usually 4, pale bluish-green.

Distribution.—The eastern and southern shores of San Francisco Bay and in the adjacent Santa Clara Valley.

The Wren-Tits have long had the distinction of being the only family of perching birds peculiar to the continent of North America. The one species is found exclusively in the Pacific coast district of the United States.

The Wren-Tits are divided locally, because of slight variations, into four groups — the type species (*Chamæa fasciata fasciata*), the Pallid Wren-Tits (*Chamæa fasciata henshawi*), Coast Wren-Tits (*Chamæa fasciata phæa*), and Ruddy Wren-Tits (*Chamæa fasciata rufula*). They are small terrestrial birds, living in the dense chaparral of the hillsides and the lower mountain slopes. Prudent to the point of secretiveness they will remain securely hidden from sight while their merry *Keep-keep-keep-keep-keep-it, keep-it, keep-it* (Mrs. Bailey) rings in your ears.

KINGLETS AND GNATCATCHERS

Order *Passeres;* suborder *Oscines;* family *Sylviidæ*

THE *Sylviidæ* family is part of the larger group of singing birds. It is found in the northern hemisphere in general and in the greater part of the tropical countries of the western hemisphere; it is most numerously represented in the northern part of the eastern hemisphere. It contains a wide variety of forms. The relatively few American forms belong to two groups, one of which, the Gnatcatchers, consisting of a single genus, is peculiar to America, while the other includes two genera, one of which, the Kinglets, is circumpolar and the other, the Willow Warblers, is of northern Europe and Asia, but is sometimes included among the birds of North America because of the occurrence of a single Siberian species (*Acanthopneuste borealis*), in western Alaska.

The American forms of the family are distinguished by the following characteristics: bill, much shorter than the head, slender, and rather broad and depressed at the base; nostril at least partly exposed, sometimes partly covered by bristly feathers turned upward; distinct bristles at the corners of the mouth; wings, rather long but with rounded tip; tail, variable as to relative length but usually decidedly shorter than the wings (longer only among the Gnatcatchers), even, notched, slightly double-rounded, or (in the Gnatcatcher group) much rounded, the feathers usually broad and rounded at the tips but sometimes (in the Kinglet genus) somewhat pointed.

In coloration, the *Sylviidæ* are plain olive, olive-green, brown, or bluish-gray above; wings and tail, sometimes crown also, black, and side tail-feathers partly white in the Gnatcatchers, the crown of the Kinglets with a yellow, orange, or red patch, and under parts whitish, yellowish, or pale grayish. The sexes are usually alike or nearly so, and the young as a rule do not differ materially from the adults — the young of the Kinglets lack the patch of color on the crown, and the female and young of the Gnatcatchers never have black on the crown.

Drawing by R. B. Horsfall Courtesy of Nat. Asso. Aud. Soc.

GOLDEN-CROWNED KINGLETS

The Kinglets and Gnatcatchers are closely related to the Thrushes, but their diminutive size and the unspotted young are unfailing differences. The *Sylviidæ*, however, probably render more service to man than the Thrushes. Their diet is more nearly exclusively insectivorous and they destroy numbers of leaf-eating larvæ and plant lice.

GOLDEN-CROWNED KINGLET

Regulus satrapa satrapa *Lichtenstein*

A. O. U. Number 748 See Color Plate 104

Other Names.— Golden-crested Kinglet; Golden-crowned Wren; Flame-crest; Fiery-crowned Wren; Gold-crest.

General Description.— Length, 4¼ inches. Upper parts, gray; under parts, olive-whitish.

Color.— ADULT MALE: Front portion of forehead and a broad stripe over the eyes, dull white or pale gray; within this *a broad V-shaped mark of black, inclosing a narrower one of yellow, within which is a large patch of bright orange or cadmium orange*, occupying center of crown and projecting over back of head; back of head (beneath rear portion of orange-colored crest), hindneck, and upper back, mouse-gray; rest of back, grayish-olive, changing gradually into brighter or more greenish-olive on rump and upper tail-coverts; wings and tail, dusky with light yellowish-olive edgings; the middle and greater wing-coverts, broadly tipped with pale olive-yellow or yellowish-white; secondaries crossed by a basal (concealed) band of pale yellow, immediately succeeded by an exposed one of dusky; an indistinct, or at least not sharply defined, dusky streak across the lores and back of the eyes, and, usually, a similar streak at the corner of the mouth; rest of sides of head, together with under parts, plain dull olive-whitish, the sides and flanks faintly tinged with more yellowish-olive; iris, brown. ADULT FEMALE: Similar to the adult male, but orange crown-patch entirely replaced by canary-yellow.

Nest and Eggs.— NEST: Spherical, about four and a half inches in diameter, composed exteriorly chiefly of green moss, lined with fine strips of bark and fine rootlets, surmounted by numerous feathers of various wild birds, arranged with points of quills downward and forming a screen that effectually conceals the eggs; semi-pensile or not, being sometimes supported beneath and sometimes fastened by top and sides to the needles of the coniferous tree in which it is usually placed, generally at a height 50 or 60 feet from the ground. EGGS: 5 to 10, varying from creamy-white to buff, sprinkled with numerous spots or blotches of pale brown, chiefly around larger end, and placed in the nest cavity in a double layer as the space is too small to hold them in one.

Distribution.— North America east of Rocky Mountains; north to Labrador, Keewatin, etc.; breeding southward to Massachusetts, central New York, northern Michigan, northern Minnesota (?), etc., and along Allegheny Mountains to western North Carolina (in spruce belt); wintering southward to northern Florida, and westward along Gulf coast to south-central Texas.

Drawing by R. Bruce Horsfall

GOLDEN-CROWNED KINGLET (nat. size)

A dainty, feathered mite

RUBY-CROWNED KINGLET

Regulus calendula calendula (*Linnæus*)

A. O. U. Number 749. See Color Plate 104.

Other Names.— Ruby-crowned Wren; Ruby-crown; Ruby-crowned Warbler.

General Description.— Length, 4½ inches. Upper parts, olive; under parts, grayish-buffy.

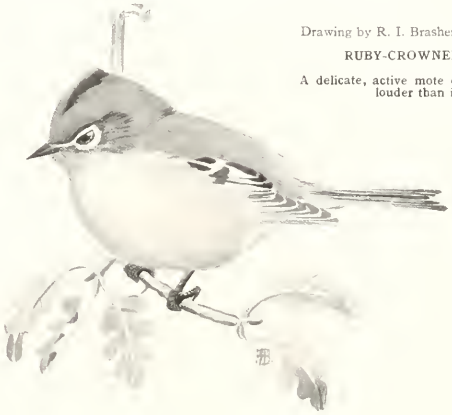
Color.— ADULT MALE: Above, plain grayish-olive on the head, gradually assuming a more decided olive hue on back, the rump and upper tail-coverts, more greenish-olive; a large, concealed fan or *wedge-shaped patch of clear vermilion-red beginning at center of crown* and overlapping back of head; wings and tail, dusky with light yellowish-olive or olive-yellow edgings, middle coverts narrowly tipped with pale grayish-olive, the greater coverts more broadly tipped with dull white (forming two bands across wing), the inner wing quills broadly edged with dull whitish; a broad whitish eye-ring, interrupted on upper eyelid, the eyelids themselves, black; rest of head, gray fading into pale grayish-buffy on chin, throat, and chest, the remaining under parts similar but more yellowish, especially on flanks, the abdomen and under tail-coverts olive-whitish; iris, dark brown. ADULT FEMALE: Similar to adult male, but without the red crown-patch.

Nest and Eggs.— NEST: Semipensile, placed almost invariably near or at end of a coniferous tree usually within 25 feet of ground; neatly and compactly built, with soft thick walls made of moss, fine strips of bark, grasses, and cocoons and lined warmly with feathers and hair. EGGS: 5 to 9, dull white or pale buffy, speckled chiefly around larger end with light brown.

Distribution.— North America in general, in wooded districts, north to the limit of tree growth, in Labrador, northern Keewatin, Mackenzie, Yukon, and Alaska (to valley of Kowak River); breeding southward to Quebec, northern Michigan, and high mountains of New Mexico, Arizona, and northern California; in winter southward entirely across United States, and over whole of Mexico to highlands of Guatemala.

The genus to which the little Kinglets belong is called *Regulus*, the translation of which is "petty king," in recognition of the patch of yellow, orange, or scarlet, shown on the top of the birds' head and which suggests a crown. These dainty little feathered "Hop-o-My-Thumbs," as Mr. Burroughs aptly called them, are the smallest of our birds, the Hummingbirds alone excepted. There is but a slight difference in their size, and little in their general coloring, excepting the distinctive marks indicated by their names; and their habits also are similar.

In the Ruby-crowned species this mark is likely to be altogether overlooked, unless the bird is excited or angry. "How does the Ruby-crowned Kinglet know he has a bit of color on his crown which he can uncover at will, and that this has great charms for the female?" asks Mr. Burroughs. "During the rivalries of the males in the mating season, and in autumn also, they



Drawing by R. I. Brasher

RUBY-CROWNED KINGLET (¾ nat. size)

A delicate, active mote of a bird whose cheerful song is louder than its size would indicate

flash this brilliant ruby at each other. I witnessed what seemed to be a competitive display of this kind one evening in November. I was walking along the road, when my ear was attracted by the fine, shrill lisping and piping of a small band of these birds in an apple-tree. I paused to see what was the occasion of so much noise and bluster among these tiny bodies. There were four or five of them, all more or less excited, and two of them especially so. I think the excitement of the others was only a reflection of that of these two. These were hopping around each other, apparently peering down upon something beneath them. I suspected a cat concealed behind the wall, and so looked over, but there was nothing there. Observing them more closely, I saw that the two birds were entirely occupied with each other.

"They behaved exactly as if they were comparing crowns, and each extolling his own. Their heads were bent forward, the red crown patch uncovered and showing as a large, brilliant cap, their tails were spread, and the side feathers below the wings were fluffed out. They did not come to blows, but followed each other about amid the branches, uttering their thin, shrill notes and displaying their ruby crowns to the utmost. Evidently it was some sort of strife or dispute or rivalry that centered about this brilliant patch." (*Far and Near.*)

It is not to be inferred from this graphically described episode that these feathered mites are pugnacious or quarrelsome creatures. Certainly Mr. Burroughs could not have meant to convey any such idea. Rather it was simply a little difference of opinion such as may arise between any two birds. Even human beings have been known to hold different opinions concerning the same subject, each defending his view and condemning the other's by language and conduct sometimes no less violent than that of Mr. Burroughs's Kinglets. As a matter of fact, not only are both species of Kinglets essentially peaceable, but they seem normally to be happy-hearted and care-free, like their larger cousins, the Chickadees, in whose company they are often found, and with whom they seem always to be on most friendly terms.

Like the Chickadees, too, the Kinglets, averaging about an inch shorter and much more fragile in their appearance, seem to enjoy the bitterest and stormiest winter weather. How such delicate creatures manage not only to survive a characteristic New England winter storm, but to be cheerful and industrious through it all, is a nine-days' wonder. Yet it is undeniably true that strong, hardened and warmly-clad men have perished in storms and cold which do not affect even the apparent happiness of these weak little folk with only a thin coat of feathers to protect their bodies from the killing blasts. What constitutions they must have!

Unlike the partly concealed marking which gives the Ruby-crowned Kinglet his name, the corresponding ornamentation of the Golden-crowned species is always plainly observable if the bird's head be in full view. In the thick foliage of coniferous trees, the bird is not easy to observe closely, but it is very conspicuous in deciduous trees from which the foliage has fallen.

The songs of the two birds differ greatly. That of the Golden-crowned bird, Mr. Brewster says, "begins with a succession of five or six fine, shrill, high-pitched, somewhat faltering notes, and ends with a short, rapid rather explosive warble. The opening notes are given in a rising key, but the song falls rapidly at the end. The whole may be expressed as follows: *tzee, tzee, tzee, tzee, ti, ti, ter, ti-ti-ti-ti.*" The song of the Ruby-crowned species is much more elaborate and musical. In describing it as he first heard it, Dr. Chapman writes: "The longer and more eagerly I followed the unseen singer, the greater the mystery became. It seemed impossible that a bird which I supposed was at least as large as a Bluebird could escape observation in the partly leaved trees. The song was mellow and flute-like, and loud enough to be heard several hundred yards; an intricate warble past imitation or description, and rendered so admirably that I never hear it now without feeling an impulse to applaud. The bird is so small, the song so rich and full, that one is reminded of a chorister with the voice of an adult soprano."

Both the Ruby-crown and the Golden-crown are represented in western North America by variant forms. The Western Golden-crowned Kinglet (*Regulus satrapa olivaceus*) has shorter wings and tail and a more slender bill than his eastern brother and the olive of his upper parts is brighter and more greenish. He breeds from Kodiak Island and Kenai Peninsula, Alaska, south through eastern Oregon to San Jacinto Mountains, California. The winters he spends from British Columbia to the highlands of Mexico and Guatemala. The Sitka, or Grinnell's Ruby-crowned, Kinglet (*Regulus calendula grinnelli*) is similar to the more widely distributed Ruby-crown, but he has a shorter wing and a larger bill, and his coloration is decidedly darker. He breeds in the Pacific coast district from Alaska to British Columbia and winters south to middle California.

GOLDEN-CROWNED KINGLET
Regulus satrapa satrapa Licht.

MALE FEMALE

RUBY-CROWNED KINGLET
Regulus calendula calendula (Linnaeus)

MALE FEMALE

BLUE-GRAY GNATCATCHER
Polioptila caerulea caerulea (Linnaeus)

MALE FEMALE

All ⅔ nat. size

BLUE-GRAY GNATCATCHER

Polioptila cærulea cærulea (*Linnæus*)

A. O. U. Number 751. See Color Plate 104.

Other Names.—Common Gnatcatcher; Little Bluish-gray Wren; Small Blue-gray Flycatcher; Sylvan Flycatcher.

General Description.—Length, 4½ inches. Upper parts, bluish-gray; under parts, whitish.

Color.—ADULT MALE: Crown and hindneck, plain bluish-gray, the back, shoulders, rump, and lesser wing-coverts slightly paler and less bluish; *front portion of forehead and sides of forehead and crown, black, forming a conspicuous U-shaped mark;* wings, dull slate color with pale gray edgings, these much broader and much paler gray (sometimes whitish) on inner wing quills; upper tail-coverts and tail, black, *the outermost tail-feathers extensively white*, with blackish shafts, the white occupying the whole of the exposed portion of both webs on the outermost feather, extending more nearly to base on outer web than on inner, the second feather with terminal half (approximately) white, the third broadly tipped with white; sides of head, pale bluish-gray; a white eye-ring; under parts, white, the throat, chest, and sides, especially the chest, faintly shaded with pale bluish-gray; bill, black; iris, brown. ADULT FEMALE: Similar to the adult male, but gray of upper parts less bluish, and without the U-shaped mark on forehead and sides of crown.

Nest and Eggs. NEST: Interior about 1½ inches deep and about the same in diameter, perfectly cup-shaped, gracefully contracted at brim; composed of soft, silky milkweed or cat-tail down, withered blossoms, or other dainty material, pinned together with fine grasses, old leaf stems, and horse-hair; exterior decorated with lichens, held on by spider-webs; usually saddled on a horizontal limb, sometimes in a sapling fork, about 15 feet from the ground; in the former situation it resembles a knot on the limb. EGGS: 4 or 5, greenish or bluish-white speckled with chestnut, umber-brown, or lilac.

Distribution.—Eastern United States; north (breeding) to New Jersey, southeastern and southwestern Pennsylvania, southern Ontario, southern Michigan, northern Illinois, southern Iowa, and eastern Nebraska, occasionally or accidentally to Long Island, Connecticut, Rhode Island, Massachusetts, Maine, northern Michigan, and Minnesota; breeding southward to Florida, Louisiana, and southern Texas; wintering in Florida and other Gulf States and southward to Bahamas, Cuba, and Mexico to Yucatan and Guatemala.

Drawing by R. I. Brasher

BLUE-GRAY GNATCATCHER (⅔ nat. size)

A fussy and fearless little fellow who doesn't hesitate to attack a bird five times his size

The Blue-gray Gnatcatcher is one of the sweetest singing birds of the southland, but owing to the weakness of its voice it can be heard only a short distance. In spring one may pass through a woodland resonant with the songs and cries of mating birds and never suspect that one of the most abundant of all the feathered inhabitants of the region is the little gray Gnatcatcher. In form it strikingly resembles a Mockingbird, but its diminutive size precludes the possibility of confusion with that bird.

The lichen-covered nest is usually placed on the horizontal limb of an oak or other deciduous tree. The nest is begun in the early spring and may easily be seen from the ground below. It is usually placed in such a position, however, that when the leaves on the surrounding twigs are fully grown, it is completely hidden from view. Both birds labor at the task of nest building, and also share alike the duties of incubation and caring for the young. Many kinds of birds maintain a discreet silence when near the nests, but not so with the Blue-gray Gnatcatcher. Sometimes he may be found exercising his vocal power to his little utmost when the female is brooding only a few feet away. On more than one occasion I have watched a male Gnatcatcher singing with might and main as he sat on the eggs taking his turn at housekeeping.

As the name of this bird implies, it is insectivorous in its feeding habits. Hence it is migratory. Until of late it has been supposed that none of the species passed the winter north of Florida. Recently, however, Arthur T. Wayne has proved that some of them spend the colder months in swamps as far north as South Carolina.

In the western United States and Mexico is found the Western Gnatcatcher (*Polioptila cærulea obscura*), a variant form of the Blue-gray. The gray of its upper parts is slightly duller and the black at the base of inner web of the outer tail-feathers is more extended than in the Blue-gray. T. Gilbert Pearson.

THRUSHES

Order *Passeres;* suborder *Oscines;* family *Turdidæ*

THE Thrushes belong to the singing birds. Their bills are slender and small and the upper mandible grows slightly thicker toward the apex. The space in front of the eyes is wide.

The various members of the Thrushes present wide differences in general appearance, form, coloration, and habits. Some live among the trees, others on the ground, and others among rocks. Some eat fruits, others insects — though many kinds feed upon both fruits and berries and insects. They may be plainly colored or of brilliant hues, though the latter is exceptional, the former being the rule.

The young of the Thrush family differ from the adults in having the upper and under parts spotted, whether that is or is not the case in the adult. This family trait is particularly noticeable in the Robin. The autumn molt is the only complete change of feathers during the year. In the spring the points of the feathers are cast off and any extremely worn feathers are replaced by new ones. The young birds have a complete molt before they migrate in their first autumn.

The family is remarkable for the number of excellent songsters it contains, the European Nightingale and the American Hermit Thrush, Veery, and Wood Thrush being renowned in this respect.

The Thrushes, as a group, are nearly cosmopolitan, only parts of Polynesia having none. They are most numerously represented in Europe and northern and central Asia. The family is well developed in the Americas, especially in the mountainous district extending from Mexico to the central Andes, the total number of species and subspecies now known to occur in the two continents being about one hundred and fifty.

TOWNSEND'S SOLITAIRE

Myadestes townsendi (*Audubon*)

A. O. U. Number 754

General Description.— Length, 8 inches. Plumage, brownish-gray, paler below. Bill, short and broad; wings, moderately long, rounded; tail, about the same length as wing, double rounded; legs, short and slender.

Color.— Above, plain brownish-gray, the under parts similar but slightly paler, especially on chin, throat, and abdomen; the under tail-coverts broadly but rather indistinctly tipped with dull white; an eye-ring of dull white; lores, dusky; wings, dark grayish-brown, with lighter brownish-gray edgings, the secondaries and inner primaries buff basally (mostly hidden by greater and primary coverts), and with a broad dusky space intervening between this buffy portion and the grayish-edged terminal portion; inner quills margined terminally with dull white (except in worn plumage); middle pair of tail-feathers concolor with back, or the outermost with terminal half of outer web dull white, the inner web broadly tipped with white, this white extending along shaft for a considerable distance, the second feather with a similar but much smaller white tip; under wing-coverts mixed pale brownish-gray and dull white; under surface of wing feathers, showing an oblique basal and subbasal band of buff; bill, black; iris, brown.

Nest and Eggs.— NEST: On the ground, or on a log or stump, or in rubbish; often in a bank-niche by a stream or sometimes in a rocky crevice; rather large and loosely made of sticks, grasses, or pine-needles and weed stalks; on this large foundation is placed the real nest, made of finer bits of similar material, but the whole carelessly and loosely constructed; the mass of material hanging below frequently betrays the nest, especially when it is placed among rocks. EGGS: 3 to 6, bluish-white, freckled with reddish-brown.

Distribution.— Mountain districts of western North America; breeding (in pine forests) from Alaska (heights above Bennett; 1500 feet above Caribou Crossing; Lake Lebarge; Yukon River, 20 miles above Circle) and Northwest Territory (Miles Canon; Semenow Hills) and from the coast ranges to the Black Hills of North Dakota and western Texas south to Mexico; wintering from Oregon, Montana, etc., southward; straggling, in autumn or winter, to Kansas, Nebraska and northwestern Illinois.

Along the wooded heights of the western mountains, the Townsend's Solitaire has its abode. Of all the North American Thrushes it is the loftiest dweller. Along the steep mountain slopes, where streams from melting snows dash downward to join the river below, this bird may be found. At times one may come upon it running along the ground over bowlders and logs in a manner very similar to that of the Robin. It is in such places that the nest of twigs

Drawing by R. I. Brasher

TOWNSEND'S SOLITAIRE (¾ nat. size)

A sweet and elusive singer in the mountain solitudes

and pine-needles is hidden, and so well is it concealed that a most laborious search is often necessary to find it. The pretty spotted eggs number from three to six.

The male Solitaire has a most pleasing song. From the top of some tree far on the heights it rings out bold and clear with a vividness of expression that harmonizes perfectly with the wild surroundings. At other times, when near the nest or late in the evening, its notes are usually subdued, and these minor strains are wonderfully appealing as one sits alone in these mountain solitudes where few birds are to be heard.

Visitors to the Yellowstone National Park or the Glacier National Park often see these birds along the mountain roads or trails. The Solitaire is about the size of the Wood Thrush, but is of more slender build. Its form, color, and movements suggest a lazy Mockingbird, and the resemblance is heightened by the white wing-bars that traverse the gray wings. The approach of winter early drives it to lower levels in quest of food. T. Gilbert Pearson.

Since this little fellow avoids civilization and makes his main habitation in the inaccessible mountain gorges of the West, his food consists largely of wild berries.

WOOD THRUSH

Hylocichla mustelina (*Gmelin*)

A. O. U. Number 755 See Color Plate 105

Other Names.— Song Thrush; Wood Robin; Bell Bird; Swamp Robin.

General Description.— Length, 7¾ inches. Upper parts, brown; under parts, white, spotted. Bill, about ½ length of head, slender, curved downward at the tip; wings, long and pointed; tail, not more than ¾ length of wing, even, the feathers slightly sharpened at the extreme tip; legs, long and slender.

Color.— *Crown, tawny-brown passing into cinnamon-brown on back and shoulders,* this into grayish-olive on rump, upper tail-coverts, and tail; wings, similar in color to back but slightly less cinnamon; a distinct eye-ring of white; lores whitish, suffused with dusky grayish in front of eye; sides of head, dusky grayish-brown, narrowly streaked with white; cheeks, white flecked with dusky; under parts, white tinged with buff on chest; a broad streak below cheeks of black or dusky along each side of throat; *chest, sides, and flanks, marked with large roundish or broadly drop-shaped spots of brownish-black; bill, dusky horn color,* the basal half below pale flesh color; iris, dark brown.

Nest and Eggs.— Nest: Usually in thickets, placed in the crotch or on horizontal limbs of saplings, six to twelve feet from ground; composed externally of leaves, grasses, small twigs, and stems placed when damp and cemented with mud, the whole quite firm and solid when dry; bits of paper or rag are frequently added as a sort of decoration; the lining formed

Courtesy of Am. Mus. Nat. Hist.

WOOD THRUSH (⅔ nat. size)

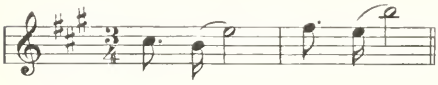
He frequently makes his home near human habitations

of fine rootlets and grasses. Eggs: 3 or 4, plain greenish-blue, like the Veery's and intermediate in size between that bird's and the Robin's.

Distribution.—Eastern temperate North America; north to New Hampshire (White Mountains), New York (breeding at Lake George), northern Ontario, northern Michigan, etc., accidentally to Maine and northeastern New York, west to middle portion of Great Plains (along wooded valleys); breeding southward to northern Florida and thence westward through Gulf States to eastern Texas; in winter southward through eastern Mexico and Central America to Nicaragua and Costa Rica, also to Bahamas, Cuba, Jamaica, and Porto Rico; straggler to the Bermudas.

The Wood Thrush is unlike any other woods-dwelling member of his famous family in the respect that, though deep woods are his natural and generally preferred abiding place, he frequently makes his home near human habitations. He seems never to become domesticated in the degree that the Robins and the Bluebirds do and his demeanor is always more shy and retiring than theirs. Nevertheless he is often found conducting his family affairs in the shade trees or shrubbery very near the homes of men, and so he becomes much better known to them than do the Hermit, the Olive-backed, the Veery, and the other Thrushes who remain essentially birds of the woods. He is, besides, the handsomest member of his tribe, and has withal the most elegant manners.

It is generally too fanciful to find resemblances between bird notes and spoken words, but no one with an ear for time and tune can deny that bird songs may — by coincidence, of course — repeat known musical phrases. So sane and accurate an observer as Herbert K. Job finds in the phrase of the Wood Thrush a distinct suggestion of "the opening appeal in Weber's 'Invitation to the Dance,' and again the 'sweetly solemn thought' of Handel's 'Largo' from 'Xerxes.'" Another bird lover says that to his ear, two successive renditions of the Wood Thrush's phrase, if the second is pitched at the usual interval above the first, reproduce very closely the first two phrases of Faust's beautiful appeal to Marguerite (in the garden), when he sings:



These two phrases are all that are claimed for the Thrush, and the pause between them is, of course, much longer than is the time value of the quarter-rest, according to the usual tempo of Gounod's music; but otherwise the phrases, in their intervals, strongly suggest Faust's impassioned address. We need not strain the probabilities by fancying that Gounod may have borrowed the song of our Thrush, but we may, at least, take a little pride in the fact that our woods had heard and learned to love this song centuries before the great French composer put

Photo by H. K. Job — Courtesy of Outing Pub. Co.

WOOD THRUSH INCUBATING

much the same music into one of his sweetest melodies.

The food of this bird consists largely of insects, with a small percentage of fruit. The insects eaten include grasshoppers, crickets, cutworms, ants, caterpillars, and beetles, including the potato beetle. The fruit consumed is chiefly of wild varieties, such as frost grapes, wild blackberries, wild cherries, and the seeds of the spice bush and southern magnolia. Since the Wood Thrush is a decidedly useful species and adapts itself readily to civilized surroundings, its presence about the farm and garden should always be encouraged.

GEORGE GLADDEN.

VEERY

Hylocichla fuscescens fuscescens (*Stephens*)

A. O. U. Number 756 See Color Plate 105

Other Names.— Wilson's Thrush; Tawny Thrush; Nightingale.

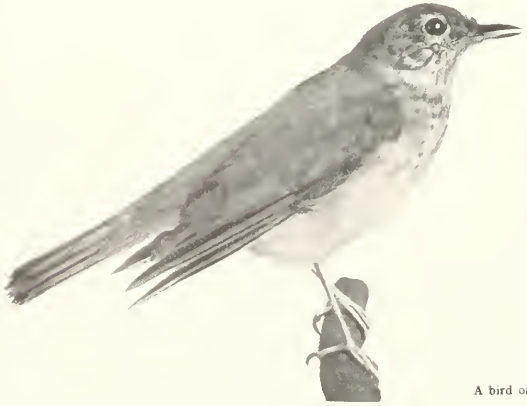
General Description.— Length, 7¼ inches. Upper parts, tawny-brown; under parts, buff and white, streaked and spotted with dark. Bill, about ½ length of head, slender, gradually and increasingly curved downward toward the tip; wings, rather long and pointed; tail, not more than ¾ length of wing, even, the feathers slightly sharpened at the extreme tip; legs, long and slender.

Color.— Above, plain tawny-brown, the wings and tail slightly duller brown, especially the former; lores, dull grayish-white; eyelids, similar, *the color not forming a distinct eye-ring*; sides of head, rather light dull tawny-brown, narrowly streaked with dull brownish-white; cheeks dull buffy-white, becoming decidedly buffy behind, where streaked with tawny-brown; *chin and throat buffy-white, gradually passing into pale buff on chest*, the latter tinged with brown laterally; the upper chest and sides of lower throat, streaked with tawny-brown; the lower chest, spotted with a paler and slightly grayer tint of the same; sides and flanks light buffy-grayish; the sides of breast sometimes faintly spotted with a darker shade of the same; rest of under parts, white; bill, dark horn color, the basal half below pale grayish-flesh color; iris, dark brown.

Nest and Eggs.— NEST: At base of bush or small tree; made of leaves, strips of grapevine or other bark, weed stems, and roots, and lined with fine rootlets or grass; nests have been found in tree hollows fifteen feet from the ground, but the usual location is on or near the ground. EGGS: 3 to 5, plain greenish-blue, like a small Robin's egg.

Distribution.— Eastern North America; breeding from northern New Jersey, Pennsylvania, northern Ohio, northern Indiana, northern Illinois, central Iowa, and southeastern South Dakota, northward to Newfoundland, Magdalen Islands, and Ontario, and southward along the Allegheny Mountains to western North Carolina (3500–5000 feet); wintering in South Carolina (?), Florida (?), Cuba, coast of Yucatan, Costa Rica, Panama, and northern South America.

The Veery is essentially a bird of the deep woods and the "silent places." He is fully as shy as the Hermit, while his song heightens the impression of mystery produced by his evident desire to avoid notice. Indeed, comparatively few persons certainly identify the song with the singer. A reprint of the *American Ornithology*, by Wilson and Bonaparte (a real Bonaparte, and writing about birds!), with poorly executed wood-cuts after Wilson's fine drawings, was a standard work as late as 1885, but not a word is there in it about the Veery! For, as we know now, the very man, Alexander Wilson, in whose honor the bird is often called "Wilson's Thrush," seems himself never to have heard the unique and beautiful song of this bird.



Courtesy of Am. Mus. Nat. Hist

VEERY (¾ nat. size)

A bird of the deep woods and silent places

The distinctive characteristic of the Veery's tone is a peculiar resonant quality, very like that produced by whistling into a long, metal tube of, say, a foot in diameter. Resonance in some degree is not an uncommon quality in the tones of several of the Thrushes, notably the Hermit; but it is the prevailing characteristic in the Veery's song. Nor is there any common bird whose vocalization involves such a perfectly adjusted tremolo effect, as dainty and innocent of apparent effort as the ripples which greet the lightest zephyr from the surface of a motionless pool.

The song has been likened to a "spiral, tremulous, silver thread of music," and has been represented by means of *connected* spirals in a uniformly descending line. The "spiral" idea is accurate, though it should be elaborated by the explanation that each curve is in the form of a finely shaded and evenly divided crescendo and diminuendo. The singer frequently begins by repeating this curve once, followed by three more renditions, and those by two more, each group being distinct (though the rest interval is very brief), and at a pitch slightly lower than the preceding one. Furthermore the entire song is in diminuendo, the last notes being noticeably softer than the first. In this respect the song is exactly the reverse of the Oven-bird's, which begins with the lowest note and increases consistently in volume and pitch to the final and highest one. The Warbler's tone, however, lacks the tremolo and resonant qualities of the Thrush's.

Ernest Thompson Seton has said that while it seems almost profane to represent this faint, soft, silvery tinkling of the Veery's song by uncouth syllables, yet he thought the best idea of the mere articulation would be suggested by the syllables *veero, veery, veery, veery,* from which no doubt the singer got its name.

During the nesting season the Veery frequents the woodlands almost exclusively and consequently its work is not of any great value to farmer or fruit-grower. It gets most of its food from the ground and like all Thrushes it feeds largely upon beetles, snails, and a great variety of insects and small fruits whenever obtainable. The Veery confines its fruit-food almost exclusively to wild fruit and cannot be considered in any way injurious.

The Willow Thrush (*Hylocichla fuscescens salicicola*) is a form of the Veery which is a little duller in coloration, the brown of the upper parts less tawny and the brown streaks on the upper chest and the sides of the lower throat averaging slightly darker. It breeds from southern British Columbia, central Alberta, central Saskatchewan, and southern Manitoba south to central Oregon, Nevada, Utah, northern New Mexico, and central Iowa; it winters in South America, south to Brazil.

Courtesy of S. A. Lottridge

NEST AND EGGS OF VEERY

Usually placed on or near the ground

GRAY-CHEEKED THRUSH

Hylocichla aliciæ aliciæ (*Baird*)

A. O. U. Number 757 See Color Plate 105

Other Name.—Alice's Thrush

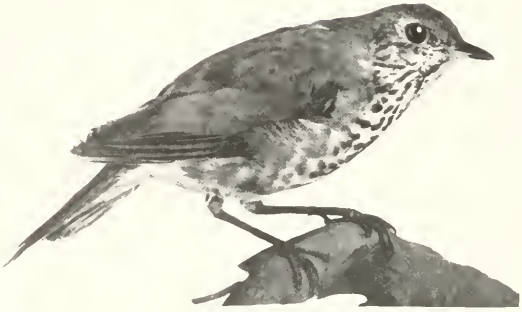
General Description.—Length, 7¾ inches. Upper parts, grayish-olive; under parts, whitish with grayish-dusky spots. Bill, about ½ length of head, slender, gradually and increasingly curved downward toward the tip; wings, rather long and pointed; tail, not more than ¾ length of wing, even, the feathers slightly sharpened at the extreme tip; legs, long and slender.

Color.—*Above uniform grayish-olive*, the tail slightly browner; sides of head, mostly grayish-olive, paling slightly around eyes, but *not showing a distinct eye-ring*, sides of head narrowly streaked with whitish; the upper portion of lores, dull whitish; *cheeks* buffy-whitish, tinged with *grayish-olive* and streaked with a darker shade of the same; under parts, white, passing on sides and flanks into pale olive-gray; chest, varying from buffy-white to pale cream-buff; a broad streak below cheeks of dusky along each side of throat; chest (sometimes lower throat also) marked with triangular spots of grayish-dusky, those on lower part of chest more transverse; breast, especially laterally, with transverse spots of light grayish-olive; bill, dusky, the basal half below pale brownish flesh-colored; iris, dark brown.

Nest and Eggs.—NEST: In low trees, from 2 to 7 feet up, occasionally on the ground; compact and large, composed of interwoven dry grasses, leaves, strips of fine bark; lined with fine dried grass; often dried moss enters largely into its composition. EGGS: 3 or 4 (usually the latter number), greenish-blue, speckled with spots of rusty and yellowish-brown.

Distribution.—Eastern and northern North America; breeding from Newfoundland (Canada Bay), Magdalen Islands(?), Labrador, Ungava, and Keewatin, to Mackenzie, Alaska (except portion south and east of Cross Sound), and northeastern Siberia; migrating southward through eastern United States (west to eastern Montana) to Cuba, Santo Domingo, Panama, and northern South America.

The annual northward concert tour of this sweet singer may extend from Peru to Alaska. This you may learn by consulting his itinerary set forth in the above paragraph devoted to his distribution. In the long journey he makes frequent stops to fill short engagements which are much appreciated by those who know of his coming, and are familiar with his program. Then he hurries on to attend to his (to him) much more important family matters.



Courtesy of Am. Mus. Nat. Hist.

GRAY-CHEEKED THRUSH (¼ nat. size)

In Alaska he may be heard singing twenty hours out of the twenty-four

In Alaska, within a hundred miles or so of that strange "Land of the Midnight Sun," his song is heard throughout all of the twenty-odd hours of daylight during his stay, and very often during the short, make-believe night. Near Port Clarence, north of Bering Strait, Mr. Burroughs heard him singing continuously in July, when there was daylight from about 2 A. M. to about 10 P. M. Incidentally he observed one member of the species doing a thing which, he says, he had never seen any Thrush do before. This bird "hovered in the air fifty feet or more above the moor and repeated its song three times very rapidly." The English Skylark is famous for its flight song, which inspired one of Shelley's most beautiful poems; and there are certain American singers which have the same pretty habit, notably the Bobolink, the Yellow-breasted Chat and the Oven-bird. The Thrushes, however, are essentially singers from perches, and the Robin especially is likely to select the topmost twig of the tallest tree available, from which to carol his evening lay. But, as Mr. Burroughs says, the gray-cheeked singer he heard had "no lofty trees to perch upon," so he "perched upon the air."

It would seem that, with so much time to practice, this Thrush ought to be a pretty good singer, and though he is not the equal of his cousins, the Wood Thrush, the Hermit, and the Veery, his is by no means a poor or indifferent effort. The quality of the tone is not unlike

that of the Veery, though it is somewhat thinner. Mr. Hoffman expresses it in the following syllables: *te-dee', de-ea, te-dee-ee*, adding that there is a slurring effect on all of the long syllables. The call-note is a sharp, impatient *fee-a*, often repeated in an ascending pitch.

During its spring sojourn this bird feeds chiefly on insects, but in the fall it prefers wild fruits and berries, such as sour gum, dogwood, poke berries, and frost grapes. Three stomachs of the Gray-cheeked Thrush taken in May contained sawfly larvæ, ants, caterpillars, May flies, ground beetles, weevils, and scarabæid beetles.

A smaller form of this bird, called Bicknell's Thrush (*Hylocichla aliciæ bicknelli*), is often seen in the higher Catskills and in the dwarfed coniferous timber high on the mountains of northern New England. This Thrush was discovered on Slide Mountain and it is often called the Slide Mountain Thrush.

RUSSET-BACKED THRUSH

Hylocichla ustulata ustulata (*Nuttall*)

A. O. U. Number 758

Other Name.— Russet-back.

General Description.— Length, 7¼ inches. Upper parts, olive-brown; under parts, white and buff with spots of olive-brown. Bill, about ½ length of head, slender, gradually and increasingly curved downward toward the tip; wings, rather long and pointed; tail, not more than ¾ length of wing, slightly notched, the feathers slightly sharpened at the extreme tip; legs, long and slender.

Color.—Above, plain olive-brown, *a conspicuous eye-ring; lores, pale buff*, the latter obscured with olive-brownish, especially near central portion; sides of head, olive-brown, with narrow shaft-streaks of pale buff or buffy-whitish; cheeks, buffy, streaked with olive-brownish; chin, throat, and chest, buff, the chin and throat sometimes buffy-white, the sides of lower throat and whole chest with triangular marks of deep olive-brown, these markings narrower and more wedge-shaped in front, broader behind, those on central portion of chest darker, sometimes approaching a sooty hue; a streak below cheek of olive-brown along each side of throat; breast, abdomen, and under tail-coverts, white, the upper portion of the first (especially on lateral portions) transversely spotted with light olive-brown; sides and flanks, pale olive-brown; under wing-coverts, pale buffy, suffused with pale brownish; bill dusky brown or blackish, the basal half pale dull fleshy below; iris, deep brown.

Nest and Eggs.— NEST: In bushes, saplings, or thickets, usually within a few feet of the ground and near water; a large compact structure of twigs, bark strips, mosses, grass, and leaves. EGGS: 4 or 5, light greenish-blue, spotted with light brown, chiefly around large end.

Distribution.— Breeding in Pacific coast district of United States, British Columbia, and southern Alaska, from southern California, probably also northern Lower California, to Juneau, Alaska; during migration, southward, western Mexico, Guatemala, Costa Rica, to eastern Ecuador and British Guiana.

"If we take the quality of melody as a test," says John Burroughs, "the Wood Thrush, the Hermit Thrush and the Veery Thrush stand at the head of our list of songsters." Yet it is often difficult to say whether the song of one bird surpasses that of another, because bird songs are largely matters of association and suggestion. The song of the Russet-back is best late in the day after all other birds have ceased singing. It comes just before dusk from the shaded cañons or from the firs on my hillside just above the river. It is a vesper hymn I love better than all others.

Every year I find two or three pairs of Russet-backed Thrushes nesting on our ten acres. One can always tell the nest of this bird by its position and by the material used. As a rule, it is in among the dark foliage or a dark clump of bushes not far from the ground. The nest is made almost entirely of moss and leaves. After the foundation of the home is built, the Thrush seeks some leaves from the damp ground. These she flattens out and molds into the bottom of the home with her breast. She collects moss for the walls and when the home is completed, it often looks like a ball of moss fastened in the briers or branches.

The Thrush is so different from the Robin. When I go out to the Robin's nest in the orchard, the owners are so angry they dash around yell-

ing, "Help! Murder! Get out of here or we'll knock your head off!" Whenever I visited the Thrush's home, the mother stayed on the nest until I almost touched her, then she slipped through the branches with a low whistle for her mate. He was near at hand. They were anxious, but they did not relieve their feelings with a great noise and fuss, as the Robins did. The Robins are noisy; the Thrushes shy and quiet.

As I watched each time the Thrush mother came to feed her young, she lingered at the nest edge. I often saw her sit for several moments at a time looking at her babies and caressing them with a real mother's love.

William L. Finley.

While this Thrush is very fond of fruit, its partiality for banks of streams keeps it from frequenting orchards when they are far from water. It is most troublesome during the cherry season, at the time when the young are in the nest. It might be inferred from this that the nestlings are fed on fruit, but such is not the case to any noticeable extent. The parent birds eat the fruit themselves, while the young, as is usual with nestlings, are fed mostly upon insects. The old birds eat some fruit throughout the season, but do not seem to attract much attention by their depredations on prunes and the later fruits. As the Thrush is one of the "soft-billed" birds, its attacks on fruits are limited to the thin-skinned varieties. It is as often seen on the ground pecking at fallen fruit as attacking the cherries on the trees. It probably confines its depredations upon the later fruits to such as have already been broken into by stout-billed birds.

This Thrush is an efficient destroyer of insects, and during its sojourn in the fruit region a little more than half of its food consists of harmful insects. In the investigation of this bird's diet 157 stomachs were examined and 52 per cent. of animal matter to 48 per cent. of vegetable was found. The animal portion was insects, spiders, earthworms, sowbugs, beetles, caterpillars, ants, wasps, and grasshoppers. The vegetable portion in addition to the skins and pulp of cherries contained seeds of blackberries, raspberries, elderberry, pepper tree, and weeds.

In its insect diet the Russet-backed Thrush is almost wholly beneficial, as it eats but few predacious beetles or other useful insects. As young Thrushes are fed almost exclusively upon insects and as they eat almost continuously from morning till night, they must destroy an enormous number of these harmful creatures. The Russet-backed Thrush must be considered as one of the positively beneficial birds.

OLIVE-BACKED THRUSH

Hylocichla ustulata swainsoni (*Tschudi*)

A. O. U. Number 758a See Color Plate 105

Other Names.— Alma's Thrush; Swainson's Thrush; Swamp Robin.

General Description.— Length, 7¼ inches. Upper parts, olive-brown; under parts, white and buff with spots of olive-brown. Bill, about ½ length of head, slender, gradually and increasingly curved downward toward the tip; wings, rather long and pointed; tail, not more than ¾ length of wing, slightly notched, the feathers slightly sharpened at the extreme tip; legs, long and slender.

Color.— Above, *uniform grayish olive-brown; conspicuous eye-ring* and lores pale buff; sides of head, olive-brown, with narrow streaks of pale buff; cheeks, buffy streaked with olive-brownish; chin, throat, and chest, buff; the chin and throat sometimes buffy-white; the sides of lower throat and whole chest with wedge-shaped marks dark olive-brown; these marks narrower and darker in front, broader and lighter behind, those on central part of chest sometimes sooty-blackish and usually on a cream-buff ground color; a streak below cheek of olive-brown along each side of throat; breast, abdomen, and under tail-coverts white; the upper portion of the first transversely spotted with olive-brown; sides and flank, grayish-olive; bill, dusky brown; the basal half below pale dull flesh color; iris, deep brown.

Nest and Eggs.— Nest: In a bush or small tree, usually from five to eight feet from ground, in secluded situations; composed of grasses, leaves and shreds of bark; in the more northern parts of the bird's range, moss enters frequently into the nest construction. Eggs: 3 or 4, with a ground color of greenish-blue, speckled with varying shades of reddish-brown, rufous, or light umber-brown.

Distribution.— North America in general except Pacific coast district south of Cross Sound and Lynn Canal; breeding from Massachusetts (Berkshire County, 2000 to 3500 feet), mountains of eastern New York (Catskills), Pennsylvania, and West Virginia (spruce belt), northern Michigan, Colorado (Rocky Mountains), Utah (Uinta and Wasatch mountains), Nevada (East Humboldt Mountains), and California (Sierra Nevada) northward to Alaska (Kenai Peninsula; Iliamna District; Yukon valley; Kowak valley, etc.), Yukon Territory (Dawson, Lake Marsh; Lake Lebarge; Caribou Crossing), Mackenzie and shores of Hudson Bay; in migration southward over whole of Mexico and Central America to Peru, Brazil, and Argentina; occasional in Bermudas and Cuba.

Courtesy of the New York State Museum

WOOD THRUSH
Hylocichla mustelina (Gmelin)

HERMIT THRUSH
Hylocichla guttata pallasi (Cabanis)

GRAY-CHEEKED THRUSH
Hylocichla aliciae aliciae (Baird)

VEERY
Hylocichla fuscescens fuscescens (Stephens)

OLIVE-BACKED THRUSH
Hylocichla ustulata swainsoni (Tschudi)

All ½ nat. size

This Thrush deserves to be much better known. To be sure he breeds chiefly in the Canadian forests and when seen in the central and eastern States (about the middle of May) is likely to be on his way to the northern wilderness; but his breeding range extends as far southward as the Catskills, in New York, and he is not an uncommon spring and summer resident on Greylock Mountain in northwestern Massachusetts, in the White Mountains, and in the lower peninsula of Michigan. In these regions he may be seen and heard frequently — by those who know what to look and to listen for.

Ocular identification of the bird may be a puzzling operation for the unpracticed or careless observer, since there really is considerable resemblance between the Olive-backed, the Gray-cheeked, the Veery, the Wood, and the Hermit Thrushes; yet the plumage of each bird shows one or more individual peculiarities by which each may be certainly and quickly identified. Besides, each species has a distinctive song, or peculiar call notes which the careful listener soon detects.

Stewart Edward White, who, besides being a mighty hunter of both the timid and the dangerous game animals of America and Africa, is an accurate and sympathetic observer of bird-life, has recorded a careful analysis of this Thrush's song, as he heard it on Mackinac Island; together with some ingenious and amusing statistics concerning the industry and persistence of the singer. Analyzing the song Mr. White says that it "begins low and ascends by two regular steps of two notes each, and ends with several sharp notes. The first note of each step is higher than the second, and the second of the next is about the same as the first note of the first step." To Mr. White the song said *gurgle, gurgle ting, chee chee chee*. Then come his statistics, which are astonishing as well as amusing.

Holding his watch on one Thrush, he noted that the bird sang, with extreme regularity, on an average nine and a half times a minute. The recital began commonly at about 3:15 A. M. and the song was repeated at the usual intervals until about 9 A. M. when an intermission began which lasted until about noon. Then the recital was resumed and the song delivered as before, but at longer intervals than during the morning performance. At about 4:30 the singer got into his pace again, and kept it up steadily until about 7:30. Therefore, Mr. White estimates, if this Thrush sang but eight times a minute for eight hour and forty-five minutes, plus occasional songs for about twenty minutes, he must have sung 4360 songs a day, or in, say six weeks, his normal singing period, no less than 168,000 songs!

The food of the Olive-back is similar to that of other small Thrushes, and, the larger part of

Courtesy of Am. Mus. Nat. Hist.

OLIVE-BACKED THRUSH (½ nat. size)

According to one count he sang 4360 songs a day

the animal food at least, comes from the ground, where the birds search busily for it, turning over the leaves, probing the moss and decayed vegetation and picking up worms, snails, and insects of various kinds, particularly beetles and ants. Dr. Sylvester D. Judd in his report to the Department of Agriculture, *Birds of a Maryland Farm*, said that he had examined the stomachs of two Olive-backed Thrushes collected in May and found that they had eaten ants, wasps, ground-beetles, darkling-beetles, and ground-spiders. This bird is fond of wild fruits of all kinds and eats large quantities. Being an inhabitant of woodlands rather than orchards or gardens, it does no damage to the horticulturist, but on the other hand renders him little service.

HERMIT THRUSH

Hylocichla guttata pallasi (*Cabanis*)

A. O. U. Number 750b. See Color Plate 105

Other Names.— American Nightingale; Swamp Angel; Swamp Robin; Rufous-tailed Thrush; Solitary Thrush.

General Description.— Length, 7 inches. Upper parts, russet-brown; under parts, white with spots of dark. Bill, about ½ length of head, slender, gradually and increasingly curved downward toward the tip; wings, rather long and pointed; tail, not more than ¾ length of wing, even, the feathers slightly sharpened at the extreme tip; legs, long and slender.

Color.— Above, plain russet-brown, *the upper tail-coverts and tail reddish-brown*; a conspicuous eye-ring of dull white; lores, dull whitish mixed with dusky grayish; sides of head, grayish-brown with very narrow shaft-streaks of dull whitish; cheeks and under parts dull white, the chest and hinder part of cheeks tinged with pale cream-buff; a dusky or sooty streak below cheeks along each side of throat; sides of lower throat with narrow wedge-shaped streaks of dusky; chest with large triangular spots of dusky grayish-brown or sooty; these more wedge-shaped on upper chest, broader and more rounded on lower chest; upper breast, especially on lateral portions, spotted with grayish-brown or brownish-gray; sides and flanks, light brownish-gray; bill, dusky brown or blackish, the basal half below pale grayish flesh color; iris, dark brown.

Nest and Eggs.— Nest: Placed on or close to the ground; rather bulky and made of grass, a few small rootlets, leaves, sometimes bits of dried moss, and rather carefully lined with finer pieces of the same material. Eggs: 3 or 4, plain greenish-blue.

Distribution.— Eastern North America; breeding from Massachusetts (Marthas Vineyard; Taconic Mountains, Berkshire County, 1000 to 2900 feet), Connecticut (Bear Mountains, Norfolk); New York (Catskills, 2300 to 2600 feet; Peterboro; Lake Ronkonkoma, Long Island?), mountains of Pennsylvania, Ontario, northern Michigan, etc., northward to Labrador, and through Manitoba and Athabasca, to Mackenzie; during migration southward to Gulf States (Florida to Texas) wintering northward (regularly) to about 39°, occasionally to lower Hudson valley, New York.

If, while you are walking through deep and slightly swampy woods, a bird somewhat smaller than a Robin, with an olive-brownish back and

Courtesy of Am. Mus. Nat. Hist.

HERMIT THRUSH (⅔ nat. size)

a dully speckled breast starts suddenly from the ground, flies quickly to a low branch, looks about, nervously tilting its *short, reddish-brown* tail and uttering a soft *whew* or *chuck* meanwhile, and then vanishes like a wraith, mark him well, for you have seen a Hermit Thrush, singer of the purest natural melody to be heard in this or, perhaps, any land. The "American Nightingale," he is sometimes called; but there are candid and competent critics who contend that in purity and sweetness of tone, as well as in technique, the Hermit's phrase is really finer than that of the celebrated English bird.

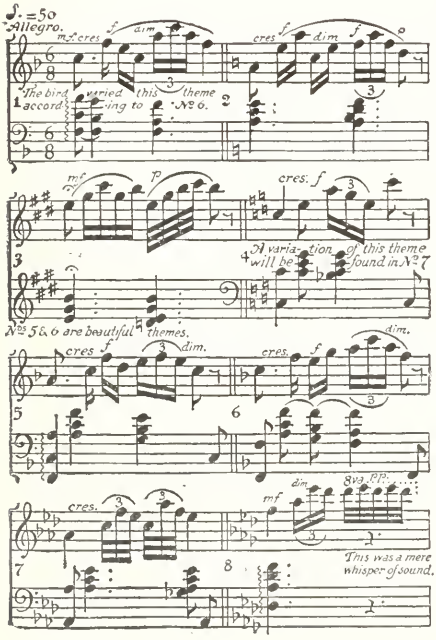
It is often remarked that the gaudy bird is rarely a good singer, and the color scheme of the Hermit's plumage is subdued and inconspicuous to a degree. Furthermore, the bird's manners are modest and retiring to the point of actual timidity. Always the Hermit seems to be trying to elude notice, and hence his appropriate name.

Of the Hermit's song, at its best, it is difficult to speak with moderation, and it is quite impossible to describe it adequately in words. The quality of the tone is not reproduced faithfully by any musical instrument. There is in it perhaps more of the flute than of any other instrument, though the tone is much mellower, more velvety, and there is a distinct suggestion of the reed quality especially in the lower registers.

Elementally the song is very simple. Often it is reminiscent of the characteristic phrase of the Wood Thrush. It differs, however, from all

the Thrush songs in that it is usually begun with a long, liquid, mellow note. This introductory tone glides into the first phrase, composed of several perfectly slurred tones in an ascending and descending scale. Within a few seconds the phrase is repeated at a pitch about a minor third higher; then it is delivered again and again in a steadily ascending scale, until fairly dizzying vocal heights are attained. Here the singer pauses for a few minutes, only to go back to the lower pitch and proceed as before.

Following are records of the songs of two Hermits as reduced to musical notation by F. Schuyler Mathews:



Rendered on a piano these phrases convey only a very faint suggestion of the matchless beauty of this song. A very fine flute or a piccolo, if perfectly handled, or a violin with skillful use of harmonics, would more nearly suggest the singer's tone, which, after all, as has been said, really cannot be accurately reproduced by any musical instrument.

To Mr. Burroughs it suggests "a serene religious beatitude as no other sound in nature does," and in his book, *Wake Robin*, he records this fine appreciation:

"A few nights ago I ascended a mountain to see the world by moonlight; and when near the summit the Hermit commenced his evening hymn a few rods away from me. Listening to this strain on the lone mountain, with the full moon just rounded from the horizon, the pomp of your cities and the pride of your civilization seemed trivial and cheap." No wonder the bird is called the "Swamp Angel"!

Another of this great artist's temperamental peculiarities is that he rarely sings responsively with others of his kind, which the Wood Thrush often seems to be deliberately trying to do. And again, unlike the Wood Thrush, and more particularly such birds as the Robin, the Catbird, and the Brown Thrasher, who seem to enjoy singing to a human audience, the Hermit is likely to become altogether silent if he sees or suspects the presence of a listener. Undoubtedly it is for these reasons, and because of the bird's solitary habits, that this really wonderful song is comparatively little known. Even the great ornithologists, Wilson and Audubon, apparently never clearly identified it. Both give the Wood Thrush full credit for his musical genius, but Audubon evidently had never heard the song of the Hermit!

GEORGE GLADDEN.

In spring and summer the Hermit Thrush feeds mainly on insects, but in fall and winter it partakes largely of various wild fruits and berries. Examination of sixty-eight stomachs showed animal matter to the extent of 56 per cent. and vegetable 44 per cent. The proportion varies little in the different months. On the whole, the food of the Hermit Thrush is remarkably free from useful products, destruction of which is a loss to mankind. The worst that can be said of the bird is that it eats and scatters the seed of poison oak, but it does not do this to a marked degree.

In the western part of North America there are five variants of the Hermit Thrush. The Alaska Hermit, or Kodiak Dwarf, Thrush (*Hylocichla guttata guttata*) is ranked as the type species; it breeds in the coast district of Alaska and winters south to Lower California, Mexico, and Texas. In size it is a little smaller than the Eastern Hermit and the brown of the upper parts is grayish instead of russet.

The Dwarf Hermit Thrush (*Hylocichla guttata nanus*) breeds in the coast district of Alaska and British Columbia and in the winter goes

south to California, Arizona, and New Mexico. It is darker than the Alaska Hermit, the back being a sepia-brown.

The Monterey Hermit Thrush (*Hylocichla guttata slevini*) is smaller, paler, and grayer than the Alaskan. California is its home and the winter is spent in Mexico and Lower California.

The Sierra Hermit Thrush (*Hylocichla guttata sequoicusis*) is slightly darker and decidedly larger than the Monterey and larger but paler and grayer than the Alaskan. It is found in the high mountains of southern California north to southern British Columbia. In the winter it goes to western Texas and over the border into Mexico and Lower California.

Similar in coloration to the Sierra Hermit but decidedly larger is Audubon's, or the Rocky Mountain, Hermit Thrush (*Hylocichla guttata auduboni*). It breeds from British Columbia and Montana south to Nevada, Arizona, and New Mexico and winters in western and central Texas and south over Mexico to Guatemala.

ROBIN

Planesticus migratorius migratorius (*Linnæus*)

A. O. U. Number 761 See Color Plate 106

Other Names.— Fieldfare; Common Robin; Robin Redbreast; Redbreast; Migratory Thrush; Canada Robin; Northern Robin; American Robin.

General Description.— Length, 10 inches. Head, black; upper parts, gray; under parts, reddish and white. Bill, decidedly shorter than head, compressed, terminal ⅔ gradually and increasingly curved downward; wings, rather long and pointed; tail, shorter than wing, even or slightly rounded, the feathers broad.

Color.—Adult Male in Spring and Summer: Head *black*; chin white; throat streaked with white and black; back, lesser wing-coverts, rump, and upper tail-coverts plain, deep mouse-gray or brownish slate-gray; larger wing-coverts and tertials darker, becoming pale mouse-gray on edges; primary coverts dark brownish slate, or dusky, edged with pale gray; tail dull slate-black or sooty black, with narrow grayish edgings; chest, breast, upper abdomen, sides, flanks, and under wing-coverts *plain, deep cinnamon-rufous;* lower abdomen, anal region, and under tail-coverts, white, the latter with concealed portion mainly gray; *white spots at the extremities of the outer tail-feathers, showing plainly when the bird is in flight;* bill, yellow; iris, deep brown; legs and feet, dark horn color or blackish brown. Adult Male in Autumn and Winter: Similar to the spring and summer plumage, but gray of upper parts tinged with olive; cinnamon-rufous feathers of under parts edged with white and other slight variations of the normal plumage. Adult Female: Similar to the male, but usually much duller in color, with gray of upper parts lighter and browner and encroaching more on head, the blackish feathers of under parts paler. Young: Head as in adults, but the black duller; back and shoulders, grayish-brown or olive; rump and upper tail-coverts, brownish-gray; wings and tail as in adults, but wing-coverts with terminal wedge-shaped spots or streaks of pale rusty, buff, or whitish; chin and throat, white or pale buffy, margined laterally with a stripe of blackish or a line of blackish streaks; under parts cinnamon-rufous, conspicuously spotted in very young birds with black, the lower abdomen white or pale buffy.

Nest and Eggs.— Nest: A thick but symmetrical bowl, made of mud reinforced with leaves and twigs, in which are frequently woven leaves, twine, paper and rags. It is lined with soft grass, and may be placed (frequently quite near the ground) in any kind of tree, or upon any suitable projection from a house, or within or without barns, sheds, and other outbuildings. Eggs: 4 or 5 (occasionally 6), greenish-blue, unmarked; usually two broods a season and sometimes three.

Distribution.— Eastern and northern North America; breeding from the southern Alleghenies (in western North Carolina, etc.), Pennsylvania, New Jersey, the New England States, Ohio, central and northern Indiana and Illinois, Iowa, northward to the limit of tree growth in Ungava (Fort Chimo), and northwestward to the valley of Kowak River in northwestern Alaska; westward nearly to the Rocky Mountains (to the Pacific at Cook Inlet, Alaska); in winter southward to southern Florida and along the Gulf coast to Texas; accidental or occasional in the Bermudas and Cuba; accidental in Europe (as escapes from captivity?).

The Robin's remarkably wide distribution, its conspicuous plumage (notably the fine red breast and black head of the male), its reputation as a harbinger of spring, and above all its evident fondness for human society, have combined to make it probably the best known bird in America. Its chief rival seems to be the Bluebird, whose range is virtually as great as that of the Robin,

and whose plumage is also very beautiful, while its peculiarly sweet and joyous warble is a surer sign of approaching spring than is the appearance of its larger relative. For, although practically all of the Robins who breed in the temperate zone migrate to warmer latitudes in the autumn, their places are taken by birds who have bred further north, so that the species is usually well represented in its northern range even in the dead of winter and where the snow lies deep. At these times, and especially when the weather is very severe, the Robins are most likely to be found in wooded swamps, where there is plenty of cover.

The Bluebird also displays charming confidence in the friendliness of man, and occasionally stays in the north during the winter months; but the Robin is, after all, the more characteristic of the two birds, and the more in evidence, too, because of its fondness for the lawns, and the trustfulness which it displays by building its nest and rearing its lusty family (who also take

Drawing by R. I. Brasher

ROBIN (⅔ nat. size)

Everybody knows the Robin and ought to welcome and protect him

to the lawns as soon as they are able to get there) often on the woodwork or in the vines of a porch within a few feet of a window or door. As an instance of the curious and stupid things a bird may do in the way of nest-building, Mr. Burroughs tells the following story:

"I was amused at the case of a Robin that recently came to my knowledge. The bird built its nest in the south end of a rude shed that covered a table at a railroad terminus upon which a locomotive was frequently turned. When her end of the shed was turned to the north she built another nest in the temporary south end, and as the reversal of the shed ends continued from day to day, she soon had two nests and two sets of eggs. When I last heard from her, she was constantly sitting on that particular nest which happened to be for the time being in the end of the shed facing the south. The bewildered bird evidently had had no experience with the tricks of turntables."

Photo by H. T. Middleton

YOUNG ROBIN

The Robin's song has, perhaps, been a little overpraised, doubtless because of its significance in the spring. It is, in fact, a cheerful rather than a melodious warble, composed of ascending and descending phrases, the final one, it must be admitted, likely to end in imperfect vocalization which suggests a lack of control of the vocal cords, and produces an effect not unlike that of the ludicrous break in the tones of a lad whose voice is changing. The call note also is bright and incisive rather than musical.

Another characteristic note of the Robin is sounded when danger is at hand, especially in the form of a cat. This is a peculiar, wailing cry, in a sort of undertone, and expresses both fear and sorrow. Very likely it may be evoked by other enemies, but it more often means a cat and a very young Robin nearby. The bird's foreboding under these conditions is really pitiful; for usually it displays great courage when its young are threatened in the nest, and frequently will swoop down on a prowling cat and actually strike it with its beak, meanwhile shrieking and screaming incessantly. This to-do often attracts other birds, who make common cause with the Robin against their common enemy, with the result that puss may be literally driven away.

Incredible though it may seem, until within a few years ago, the Robin was classified, in several of the southern States, as a "game bird," and as such was killed in countless thousands for food or for "sport." This slaughter of a beautiful and highly useful song bird is now forbidden by the Federal Migratory Bird Law, which became a statute on March 4, 1913, and under which all migratory game and insect-eating birds are made wards of Uncle Sam.

Spencer Trotter says that "Our American Robin was known to the early southern colonists as the 'fieldfare' and is so termed by Catesby. The bird has many of the qualities of its British congener."

The economic status of the Robin probably has received more attention than that of any other bird. There is no denying the fact that the bird eats or injures a great amount of small fruit, especially cherries and berries in their season. On the other hand, it is equally certain that the Robin destroys enormous quantities of noxious insects. Nor should it be forgotten that the bird's raids upon cultivated fruits and berries are due largely to the destruction by man of the wild fruits and berries (especially wild cherries) which form part of its natural and preferred diet.

An examination of 350 stomachs of Robins shows that over 42 per cent. of its food is animal matter, principally insects, while the remainder is made up of small fruits and berries. Over 19 per cent. consists of beetles, about one-third of which are useful ground beetles, taken mostly in spring and fall, when other insects are scarce. Grasshoppers make up about one-tenth of the whole food, but late in August comprise over 30 per cent. Caterpillars form about 6 per cent., while the rest of the animal food is made up of various insects, with a few spiders, snails, and angleworms. All the grasshoppers, caterpillars, and bugs, with a large portion of the beetles, are injurious, and it is safe to say that noxious insects comprise more than one-third of the Robin's food.

Vegetable food forms nearly 58 per cent. of the stomach contents, over 47 being wild fruits, and only a little more than 4 per cent. being possibly cultivated varieties. Cultivated fruit, amounting to about 25 per cent., was found in the stomachs in June and July, but only a trifle in August. Wild fruit, on the contrary, is eaten in every month, and constitutes a staple food during half the year. The depredations of the Robin seem to be confined to the smaller and earlier fruits.

In view of the fact that the Robin takes ten times as much wild as cultivated fruit, it seems unwise to destroy the birds to save so little. Nor is this necessary, for by a little care both may be preserved. Where much fruit is grown it is no great loss to give up one tree to the birds; and in some cases the crop can be protected by scarecrows. Where wild fruit is not abundant, a few fruit-bearing shrubs and vines judiciously planted will serve for ornament and provide food for the birds. The Russian mulberry is a vigorous grower and a profuse bearer, ripening at the same time as the cherry, and, so far as observation has gone, most birds seem to prefer its fruit to any other. It is believed that a number of these trees planted around the garden or orchard would fully protect the more valuable fruits.

Two variant forms of the American Robin occur within the bounds of the United States. The Southern, or Carolinian, Robin (*Planesticus migratorius achrusterus*) is smaller in size and its color is paler and duller. It is found in the southeastern States. The other is called the Western Robin (*Planesticus migratorius propinquus*). It averages slightly larger than its eastern congener, and the gray of its upper parts is a little more olive and the red of the under parts paler. It is found from Alaska to Mexico and from the Pacific coast to the Great Plains.

Photo by H. T. Middleton

ROBIN ENTERING NEST

VARIED THRUSH

Ixoreus nævius nævius (*Gmelin*)

A. O. U. Number 763

Other Names.— Oregon Robin; Alaska Robin.

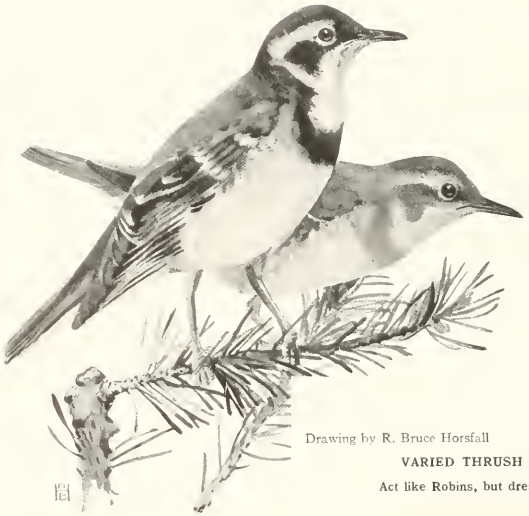
General Description.— Length, 10 inches. Upper parts, slate color; under parts, tawny and white, crossed by a band of slate-black. Bill, much shorter than head, slender, and nearly straight; wings, rather long and pointed; tail, shorter than wing, even.

Color.— Adult Male: Above, plain slate color, the feathers, especially those of crown and back, sometimes (in certain lights) slightly darker centrally; wings (except lesser coverts) dusky, with slate-gray edgings, the middle coverts with a large terminal spot (usually triangular in form) of tawny, the greater coverts also broadly tipped with the same (mostly on outer web), the secondaries edged subterminally with a paler and duller tint of the same, the primaries (except two or three outermost) cinnamon-buff on basal portion of outer web and edged with the same half way to tip, the outer web of secondaries also buff basally (concealed by greater coverts), the inner feathers often tipped with pale buffy; two or three outermost tail-

feathers with a whitish spot at tip of inner web (largest on the outside feathers); a conspicuous stripe above ears of tawny, extending from middle of upper eyelid (sometimes from above lores) to nape; lores below eyes and sides of head uniform slate-black; *cheeks, chin, throat, and breast uniform tawny,* the chest crossed by rarely interrupted band of slate-black, the feathers sometimes margined with a more slaty hue; sides and flanks similar in color to breast but paler, the feathers broadly margined with olivaceous slate-gray; abdomen, white; under tail-coverts brownish-slate-gray basally, extensively white terminally, the white usually suffused with tawny; under wing-coverts white basally, broadly slate-gray terminally; inner webs of wing feathers crossed by a broad basal band of pale buffy; bill, brownish-black; iris, brown. ADULT FEMALE: Much duller in coloration than the adult male; upper parts varying from olivaceous slate-gray to brownish-olive (still browner on crown); the markings on wings and tail as in the male; tawny color of under parts paler; the band across chest indistinct and never (?) uniform blackish or slate color — usually with feathers dusky centrally (more or less concealed), margined with dull buffy-grayish; white of rear under parts usually (?) relatively more extended than in male.

Nest and Eggs.—NEST: Placed in low bushes always on or near the banks of a stream; it is rather large for the bird; the foundation is a carefully constructed arrangement of interlaced slender twigs; upon this base is erected the main structure of closely interwoven fine grasses, moss and long gray lichens. EGGS: Usually 4, pale greenish-blue, sparsely spotted with dark umber-brown.

Distribution.— Western North America; breeding from northern California, northward to the limit of spruce forests in northern Alaska; the eastern breeding limit is uncertained, but probably includes the spruce forests of the interior mountain districts, at least in British Columbia, possibly to northern Idaho and Montana; wintering from Kodiak Island southward to southern California (as far as Colorado River), and occurring during migration in Montana (Cœur d'Alene Mountains) and straggling eastward to Kansas, New Jersey, New York, and Massachusetts.



Drawing by R. Bruce Horsfall

VARIED THRUSH (½ nat. size)

Act like Robins, but dressed differently

Frequently we have inquiries from people as to a strange bird that comes in the midst of winter down into our western Oregon valleys. It looks and acts like an ordinary Robin, but its dress is so changed from this well-known bird.

The Varied Thrush, Alaska Robin, or Oregon Robin, as it is sometimes called, lives back in the mountains in the wilder sections where the timber is most dense. The bird has a weird and mysterious note, a sort of a monotone song that can be imitated by using a combination whistle and voice note. I have never heard any different song or note from this bird except one summer when we were traveling through the coast mountains of Oregon when a young bird flew along the bank by a wood road. We gave chase and caught it. But the moment I closed my hand on the bird, it cried out in alarm and down swooped a mother Varied Thrush. She was frantic. She let out a variety of exclamatory notes and phrases such as I had never heard in the vocabulary of any bird. It was a surprise

ROBIN *Planesticus migratorius migratorius* (Linnaeus)

ADULT IN SPRING — IMMATURE — FALL

BLUEBIRD *Sialia sialis sialis* (Linnaeus)

MALE — IMMATURE — FEMALE

All ½ nat. size

to me to know that this solitary, single-note singer was like a Shakespeare in the bird world, for she used such a large vocabulary.

When John Burroughs was a member of the Harriman Expedition to Alaska in 1899, he met this bird for the first time. His thoughts are recorded in some verses which were written at the time:

> O Varied Thrush! O Robin strange!
> Behold my mute surprise.
> Thy form and flight I long have known,
> But not this new disguise.

The Varied Thrush is driven down from the high mountains by the snows of winter. When he first comes into the valleys, the later fruits are still hanging on vine and tree. He seems to be ravenously hungry for the sweet-tasting fruit that has been planted by man. His taste sometimes turns to grapes and apples to such an extent that some farmers think him a nuisance.

If one wishes to have Varied Thrushes about his home during the winter, all he has to do is to leave some apples hanging on one of the old trees of the orchard. After the leaves have fallen, the Thrushes will stay as long as the apples last. They seem to live almost entirely on this fruit, especially when the snow is on the ground.

WILLIAM L. FINLEY.

BLUEBIRD

Sialia sialis sialis (*Linnæus*)

A. O. U. Number 766. See Color Plate 106

Other Names.— Eastern Bluebird; Wilson's Bluebird; Blue Robin; Common Bluebird; Blue Redbreast; American Bluebird.

General Description.— Length, 7 inches. Upper parts, bright blue; under parts, cinnamon-chestnut and white. Bill, small and slender; wings, long and pointed; tail, shorter than wing, distinctly notched; legs, short.

Color.— ADULT MALE: Upper parts, uniform bright blue, the shafts of wing- and tail-feathers black; and tips of wing-feathers (especially primaries) dusky; sides of head including cheeks (sometimes including

Drawing by R. I. Brasher

BLUEBIRD (⅔ nat. size)

His soft warble, beautiful blue coat, warm waistcoat, and gentle manners make him the most welcome herald of spring

also chin and sides of upper throat), lighter and grayer blue; throat, chest, breast, sides, and flanks, uniform dull cinnamon-chestnut; abdomen, anal region, and under tail-coverts, white, the last with longer feathers tinged with pale grayish-blue, the shorter ones with pale cinnamon-rufous; under wing-coverts, pale grayish-blue; bill, black; iris, dark brown. ADULT FEMALE: Above, bluish-gray tinged with light grayish-brown (especially in autumn and winter), passing into bright blue on rump, upper tail-coverts, and tail; wings, blue, the inner quills and innermost greater coverts edged with pale brownish-gray or whitish, the outermost primary edged with white; front and lateral under parts, dull rufous-cinnamon (paler in summer, deeper in fresh autumn plumage), the chin and upper throat paler; abdomen, anal region, and under tail-coverts, white.

Photo by S. A. Lottridge

NEST OF BLUEBIRD

Section of tree cut away to show nest. The birds entered through hole above

Nest and Eggs.— NEST: The natural nesting-sites are in deserted Woodpecker holes, hollows of decayed trees, or crevices of rocks; it was one of the first birds to take advantage of "modern conveniences" and quickly appropriated boxes placed around the farm houses for its occupancy; hollows in old rail-fences are often used and in some parts of New England a large percentage of nests are so located; more rarely the pair usurp a Swallow's nest; the nest is composed of grass, weed stalks, a few bits of bark, and lined with finer grass-blades. EGGS: 4 to 6, rarely 7 and usually 5, plain light bluish-white in color.

Distribution.— United States and southern Canada east of Rocky Mountains; north to Nova Scotia, southern New Brunswick, southern Maine, Vermont, northern New York (Adirondacks), northern Ontario and Manitoba, occasionally to northern New Brunswick, northern Maine and southern Quebec; west to eastern base of Rocky Mountains, in Montana, Wyoming and Colorado; breeding southward to southern Florida and along the Gulf Coast to southern and west-central Texas; Bermudas (resident); accidental in Cuba.

This beautiful and singularly lovable bird divides with the Robin the grateful mission of bringing to its northern human friends the welcome news that spring is at hand. In the article on the Robin, it is explained that many individuals of that species remain during the winter months in northern latitudes of the United States. Few Bluebirds do this; and their appearance in the spring is, therefore, much more significant than is the Robin's. To be sure, the Bluebird's migratory instinct occasionally gets the better of his meteorological discretion, so that his greeting to his northern breeding grounds is sometimes a howling "north-easter," bringing snow and freezing temperatures which drive him back to the southland, or not infrequently cost him his life.

A real tragedy of this kind occurred in the spring of 1895, when many species of migratory birds, but especially the Bluebirds, were caught in the wave of severely cold weather which swept through the Middle and Gulf States. Thousands of Bluebirds perished in the storms and bitter cold which lasted for a week or more; their frozen bodies were found everywhere — in barns and other outhouses where the poor things had vainly sought shelter; in the fields and woods and even along the roadsides. In the localities

affected, they were almost exterminated. To many people it was a sad spring in those regions.

Much dubious ornithology has been produced by poets from whose minds facts are crowded out by fancies, but James Russell Lowell revealed a trained eye, as well as an appreciation of the beautiful, when he wrote (in "Under the Willows") of

> The Bluebird, shifting his light load of song,
> From post to post along the cheerless fence,

a pretty spring habit of the bird which has delighted many a wayfarer.

Like the Robin, the Bluebird shows a decided fondness for human society. Orchards are favorite natural resorts of the bird, and furnish plenty of home-sites in the shape of hollow trunks or limbs of trees, for the bird always prefers a cavity of some kind wherein to place its nest. The wise owner of such trees will do his utmost to encourage this tenancy. Indeed, if he will scatter through his orchard a goodly supply of Bluebird homes, in the form of short sections of hollow limbs, covered at the top and bottom, and with an auger-hole doorway, he will soon have plenty of Bluebird tenants, who will pay their rent many times over by destroying injurious insects and worms. For, with the possible exceptions of the House Wren and the Purple Martin, the Bluebird is as willing as any bird to set up housekeeping in a dwelling for him made and provided.

The sentimental aspects of the society of Bluebirds will not be overlooked by people who appreciate manifestations of very genuine domestic peace and happiness. None of our common birds are so demonstrative in their expressions of devotion to each other, and in their affectionate solicitude for their young. The note of lament which is so plainly expressed in the Bluebird's abbreviated warble as it prepares to follow the retreating summer, brings a sympathetic echo from many a human heart.

GEORGE GLADDEN.

The Bluebird has not been accused, so far as known, of stealing fruit or of preying upon crops. An examination by the United States Biological Survey of 855 stomachs showed that 68 per cent. of the food consisted of insects and their allies, while the other 32 per cent. was made up of various vegetable substances and was found mostly in stomachs taken in winter. Beetles constituted 21 per cent. of the whole food, grasshoppers 22, caterpillars 10, and various other insects 9, while a number of spiders and myriapods, about 6 per cent., comprised the remainder of the animal diet. All these are more or less harmful, except a few predacious beetles, which amounted to 9 per cent. The destruction of grasshoppers by Bluebirds is very noticeable in August and September, when these insects make up about 53 per cent. of the diet. So far as its vegetable food is concerned the Bluebird is positively harmless. The only trace of any useful product in the stomachs consisted of a few blackberry seeds, and even these probably belonged to wild rather than cultivated varieties.

The Azure Bluebird (*Sialia sialis fulva*) wanders over the Mexican border into Arizona. It is much like the type species, though the browns of its plumage are paler, the grayish-blue nearer a gray-white, and the blue of the upper parts greener.

WESTERN BLUEBIRD

Sialia mexicana occidentalis *J. K. Townsend*

A. O. U. Number 767

Other Name.— California Bluebird.

General Description.— Length, 7 inches. MALE: Upper parts, cobalt-blue; under parts, blue and red. FEMALE: Upper parts, grayish-brown and blue; under parts, grayish-brown, brownish-gray, and cinnamon-rufous. Bill, small and slender; wings, long and pointed; tail, shorter than wing, distinctly notched; legs, short.

Color.— ADULT MALE: Above, plain rich cobalt-blue, brighter blue on rump, upper tail-coverts, tail, and outer webs of primaries; shafts of feathers of wing and tail, sometimes also of shoulder, the upper tail-coverts sometimes with streaks of black; a patch of chestnut on back between shoulders; sides of head, chin, throat, upper central (usually also whole center of) chest, and breast, uniform blue, slightly paler and duller than color of upper parts, the blue gradually fading on abdomen and flanks into pale gray; sides of chest and breast and front part of sides, chestnut, this extended across chest, connecting the two lateral areas, extending along sides to flanks; under tail-coverts, blue edged basally with pale gray; under wing-coverts, darker blue; bill, black; iris, dark brown. ADULT FEMALE: Crown, hindneck, dark brownish-gray; back and shoulders, light grayish-

brown forming a distinct patch; rump and lesser wing-coverts, dull blue, the former rather brighter, passing into bright blue on upper tail-coverts and tail; middle and greater wing-coverts and inner quills, dusky grayish-brown edged with paler brownish-gray or bluish; secondaries, dull bluish; the primaries, lighter and brighter blue narrowly edged with whitish, the outermost broadly edged with white; sides of head, throat, center portion of upper chest, and breast, light brownish-gray passing into dull grayish on chin; sides of chest and breast and more or less of sides, dull cinnamon-rufous; abdomen and flanks, pale grayish-brown; under tail-coverts pale dull grayish-blue, edged with pale brownish-gray, usually with a dusky shaft-streak; under wing-coverts, dull grayish-blue or bluish-gray; bill and iris as in male.

Nest and Eggs.— Nest: In holes of dead trees, between the trunk and loose bark, and, in the more settled parts of its range, in boxes supplied for the purpose; comprised of sticks, straw, hay, or any similar material. Eggs: 4 or 5, uniform pale blue, somewhat deeper in shade than those of the Eastern Bluebird.

Distribution.— Pacific coast district from Los Angeles county, California, to British Columbia, chiefly from the coast to the western slope of the Sierra Nevada and Cascade ranges, but extending eastward through eastern Oregon and Washington to northern Idaho and western Montana (breeding); northward to British Columbia (Vancouver Island); southward in winter as far as San Pedro Martir Mountains, Lower California.

This form so strongly resembles the Common Bluebird of the Eastern States that only a trained eye would detect the color difference between the two birds. Its habits and disposition, too, are virtually those of the eastern bird, nor is there any material difference between the economic status of the two, both undoubtedly doing very valuable work in the destruction of insect-pests.

In an examination of 217 stomachs of the Western Bluebird, animal matter (insects and spiders) was found to the extent of 82 per cent. and vegetable matter to the extent of 18 per cent. The bulk of the former consisted of bugs, grasshoppers, and caterpillars. Grasshoppers, when they can be obtained, are eaten freely during the whole season. Caterpillars also are a favorite food and are eaten during every month of the year; March is the month of greatest consumption, with 50 per cent., and the average for the year is 20 per cent. Two stomachs taken in January contained 64 and 50 per cent., respectively, of caterpillars. Beetles also are eaten and comprise mostly harmful species. The vegetable matter consists of weed seeds and small fruits. In December a few grapes are eaten, but elderberries are the favorites whenever they can be found.

The southern Rocky Mountain region has two slightly differing forms of Western Bluebird. The Chestnut-backed Bluebird (*Sialia mexicana bairdi*) ranges through Utah, Colorado, and western Texas south into Mexico; the San Pedro Bluebird (*Sialia mexicana anabelæ*) breeds in San Pedro Martir Mountains.

MOUNTAIN BLUEBIRD

Sialia currucoides (*Bechstein*)

A. O. U. Number 708

Other Name.—Arctic Bluebird.

General Description.— Length, 7¼ inches. Male: Upper parts, cerulean-blue; under parts, turquoise-blue and white. Female: Upper parts, gray and turquoise-blue; under parts, brownish-gray and white. Bill, small and slender; wings, long and pointed; tail, shorter than wing, distinctly notched; legs, short.

Color.— Adult Male: Above, plain rich cerulean-blue, the wings and tail slightly more cobalt-blue; shafts of wing- and tail-feathers, black, and terminal portion of primaries, dusky; *sides of head, chin, throat, chest, breast, and sides plain turquoise-blue*, decidedly paler and less bright than color of upper parts; abdomen, hinder flanks, anal region, and shorter under tail-coverts white; longer under tail-coverts pale turquoise tipped or margined with white; bill, black; iris, dark brown. Adult Female: Crown, hindneck, back, and shoulders plain mouse-gray, sometimes faintly tinged with greenish-blue; rump, upper tail-coverts, tail, and wing (except inner feathers), turquoise-blue; inner quills and greater wing-coverts, similar in color to back, but darker, edged with paler, and sometimes tinged with blue; lesser and middle wing-coverts dull greenish-blue, or else dusky brownish-gray margined with bluish; an eye-ring of dull white; sides of head similar in color to crown but rather browner; chin, throat, chest, breast, and sides, pale brownish-gray passing into dull white on abdomen, hinder flanks, anal region, and under tail-coverts, the longer of the latter with dusky shaft-streaks and sometimes tinged with blue; bill and iris as in the male.

Nest and Eggs.— Nest: Placed in a hollow limb,

abandoned Woodpecker hole, corners of barns and outbuildings, and even under the eaves of porches or houses; in parts of the West, old abandoned mine shafts are utilized; the nest is built almost entirely of dried grass, and is lined occasionally with a few feathers and fine strips of cedar or other tree bark. Eggs: From 4 to 7, usually 5, plain greenish-blue.

Distribution.— Mountain districts of western North America; north to Mackenzie and Yukon Territory; breeding southward to higher mountains of New Mexico and Arizona (San Francisco and Mogollon Mountains), and Chihuahua, eastward to eastern Wyoming (Black Hills) and northwestern Texas, westward to the Sierra Nevada and Cascade ranges; wintering southward from southern California and Colorado to Guadalupe Island, Lower California, northern Sonora, and northwestern Chihuahua and eastward to Kansas, Oklahoma, and Texas.

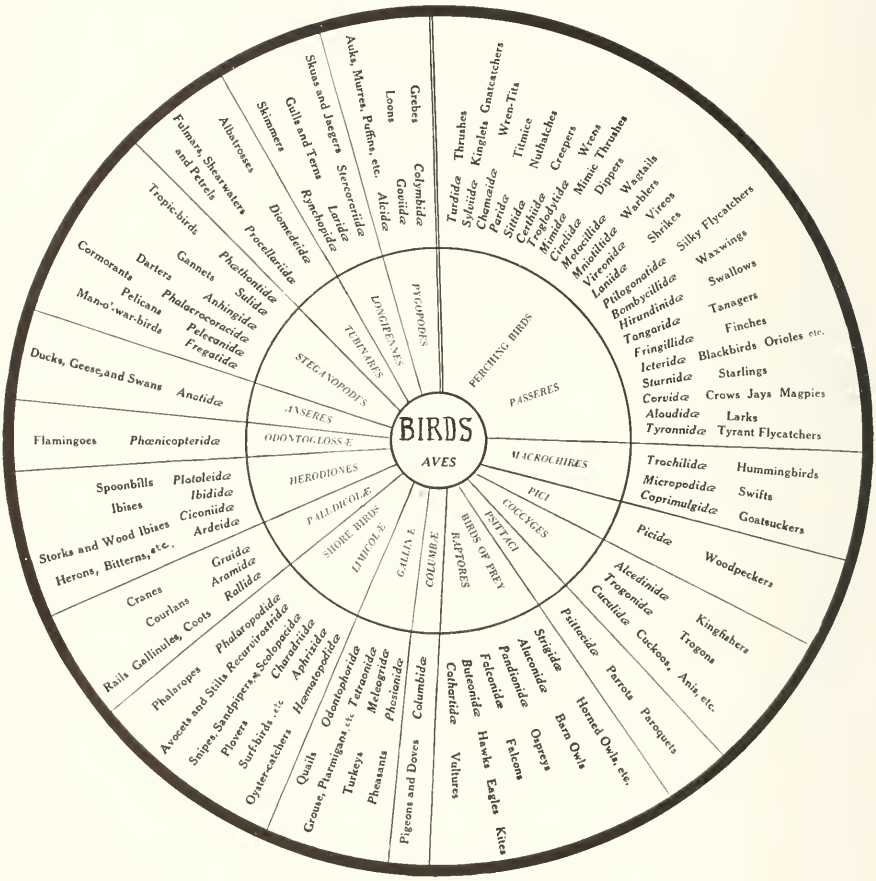
Though it is somewhat larger, and has a proportionately shorter tail, the Mountain Bluebird presents a general appearance very similar to that of its eastern relative. As its name indicates, however, it has a distinct liking for the mountains. Wells W. Cooke found the birds in Colorado above timber-line to at least 13,000 feet. Another observer records being greeted by a little family of them near the summit of San Antonio Peak ("Old Baldy,") in southern California, at an altitude of nearly 10,000 feet, at that time far above the clouds, through whose dense billows the highest of the surrounding peaks protruded like islands in a motionless sea. The indescribable weirdness of the scene, and the unearthly quiet, which had deeply impressed the lone wanderer, had no apparent effect upon the Bluebirds, whose warbling was as sweet and gentle up there above the clouds as that of their eastern brethern in a Connecticut Valley orchard.

Their insect food is obtainable at all times of the year, and the general diet varies only in the fall, when some fruit, principally elderberries, is eaten, though an occasional blackberry or grape is also relished.

Drawing by R. I. Brasher

MOUNTAIN BLUEBIRD (½ nat. size)

A gentle mountaineer often found far above timber-line



The above Chart is limited to a consideration of the birds of America, and follows the terminology of the official Check List of the American Ornithologists' Union, and of the preceding pages of the present work. It will be noted that the Class, Birds, comprises seventeen Orders in North America, the names of which are listed in the second circle. These Orders are subdivided into Families. Beginning with the lowest form, the Grebes, the gradual development of bird life can be traced around the circle to the highest form, the Thrushes.

COLOR KEY TO WATER BIRDS

BLACK

Size of Duck or Larger

Sooty Shearwater
Water Turkey
Cormorant
Double-crested Cormorant
Brandt's Cormorant
Man-o'-war-bird
Black Duck
Florida Duck
Scoter
White-winged Scoter
Surf Scoter
Black-footed Albatross

Smaller than Duck

Fork-tailed Petrel
Least Petrel
Kaeding's Petrel
Storm Petrel
Wilson's Petrel
Black Tern
Black Rail
Coot
Black Oyster-catcher

BLACK AND WHITE

Size of Duck or Larger

Western Grebe
Loon
Black-throated Loon
Murre
California Murre
Brünnich's Murre
Razor-billed Auk
Great Auk
Great Black-backed Gull
Black Skimmer
Laysan Albatross
Scaup Duck
Lesser Scaup Duck
Ring-necked Duck
Golden-eye (head purple)
Barrow's Golden-eye (head greenish)
Buffle-head
Harlequin Duck
Labrador Duck
Steller's Eider
Spectacled Eider
Northern Eider
Eider
King Eider
Canada Goose (back brown)
Hutchins's Goose (back brown)
White-cheeked Goose (back brown)
Cackling Goose (back brown)
Brant (back brown)
Black Brant (back brown)
Merganser
Hooded Merganser (head green)
Mallard (head green)
Shoveller (head green)
Old-squaw
Yellow-crowned Night Heron

Smaller than Duck

Horned Grebe
Eared Grebe
Tufted Puffin
Puffin
Cassin's Auklet
Crested Auklet
Least Auklet
Ancient Murrelet
Black Guillemot
Pigeon Guillemot
Dovekie
Pomarine Jaeger
Parasitic Jaeger
Long-tailed Jaeger
Sooty Tern
Greater Shearwater
Leach's Petrel
Black-crowned Night Heron
Black-necked Stilt
Black-bellied Plover
Golden Plover
Oyster-catcher
Black Turnstone
Purple Sandpiper
Aleutian Sandpiper
Pribilof Sandpiper
Greater Yellow-legs
Yellow-legs
Solitary Sandpiper
Western Solitary Sandpiper

BLACK, RED, AND WHITE

Size of Duck or Smaller

Holbœll's Grebe
Red-throated Loon
Red-breasted Merganser
Wood Duck
Redhead
Canvas-back
Red Phalarope
Red-backed Sandpiper

WHITE

Size of Duck or Larger

Ivory Gull
Glaucous Gull
Glaucous-winged Gull
Yellow-billed Tropic-bird
Red-billed Tropic-bird
Gannet
Snow Goose
Greater Snow Goose
Whistling Swan
Trumpeter Swan
Roseate Spoonbill
White Ibis
Wood Ibis
Great White Heron
Egret
Whooping Crane
White Pelican

Smaller than Duck

Ross's Gull
Snowy Egret
Little Blue Heron (white phase)
Avocet (primaries black)

BROWNISH

Size of Duck or Larger

Skua
Booby (whitish below)
Brown Pelican
White-fronted Goose
Limpkin

Smaller than Duck

Bittern
Noddy

BROWNISH, MIXED OR STREAKED WITH YELLOWISH OR WHITE

(Usually lighter below)

Size of Duck or Larger

Gadwall
European Widgeon
Baldpate
Pintail

Smaller than Duck

Cory's Shearwater
Least Bittern
King Rail
California Clapper Rail
Clapper Rail
Louisiana Clapper Rail
Caribbean Clapper Rail
Virginia Rail
Sora
Yellow Rail
Woodcock
Wilson's Snipe
Dowitcher
Long-billed Dowitcher
Stilt Sandpiper
Pectoral Sandpiper
White-rumped Sandpiper
Baird's Sandpiper
Least Sandpiper
Semipalmated Sandpiper
Western Sandpiper
Marbled Godwit
Pacific Godwit
Hudsonian Godwit
Willet
Western Willet
Upland Plover
Buff-breasted Sandpiper
Spotted Sandpiper
Hudsonian Curlew
Long-billed Curlew
Eskimo Curlew
Turnstone
Ruddy Turnstone

RED

Larger than Duck

Flamingo

BLUISH-GRAY ABOVE, WHITE BELOW

Size of Duck or Larger

Herring Gull
California Gull
Ring-billed Gull
Fulmar
Pacific Fulmar
Blue Goose
Emperor Goose
Great Blue Heron

Smaller than Duck

Kittiwake
Pacific Kittiwake
Laughing Gull (head black)
Franklin's Gull (head black)
Bonaparte's Gull
Sabine's Gull (head black)
Heermann's Gull (head white)
Gull-billed Tern
Caspian Tern
Royal Tern
Cabot's Tern
Forster's Tern
Common Tern
Arctic Tern
Roseate Tern
Least Tern
Northern Phalarope
Sanderling
Knot (breast chestnut)
Surf-bird

All the Terns in this group have the crown black

SLATE-GRAY

Larger than Duck

Little Brown Crane
Sandhill Crane

Smaller than Duck

Florida Gallinule
Louisiana Heron (white below)
Little Blue Heron (dark phase)

CHESTNUT

Size of Duck or Larger

Green-winged Teal (back mottled gray and white, breast spotted with black)
Blue-winged Teal (head gray, white crescent in front of eye)
Cinnamon Teal (back mottled with dusky and brown)
Ruddy Duck (crown black, cheeks and chin white)
Glossy Ibis (back irridescent blackish)
White-faced Glossy Ibis (back irridescent blackish, face white)

GREENISH

Smaller than Duck

Green Heron (throat streaked with dark chestnut)

GRAYISH-BROWN ABOVE, WHITE BELOW

Smaller than Duck

Semipalmated Plover
Ringed Plover
Piping Plover
Snowy Plover
Wilson's Plover
Mountain Plover
Killdeer (two black bands on breast)
Wilson's Phalarope (neck rufous)

PURPLE

Smaller than Duck

Purple Gallinule

COLOR KEY TO LAND BIRDS

BLACK

Size of Crow or Larger

California Vulture
Wild Turkey
Black Vulture
Raven
White-necked Raven
Rough-legged Hawk
Zone-tailed Hawk
Crow
Dusky Grouse
Franklin's Grouse
Bald Eagle (young)
Black Gyrfalcon
Everglade Kite
Audubon's Caracara
Fish Crow
Hudsonian Spruce Partridge

Size between Crow and Robin

Ivory-billed Woodpecker
Lewis's Woodpecker
Groove-billed Ani
Purple Grackle
Brewer's Blackbird
Rusty Blackbird
Pileated Woodpecker
Boat-tailed Grackle
Starling

Smaller than Robin

Purple Martin
Cowbird
Red-eyed Cowbird
Phainopepla
Catbird
Black Swift
Dipper

BLACK AND WHITE

Size of Crow or Larger

Bald Eagle
Swallow-tailed Kite
Duck Hawk
Osprey

Size between Crow and Robin

Magpie
Nighthawk
Pigeon Hawk

Smaller than Robin

Hairy Woodpecker
Black-headed Grosbeak
Downy Woodpecker
Texas Woodpecker
White-headed Woodpecker
Williamson's Sapsucker
Towhee
Arctic Towhee
Snow Bunting
Slate-colored Junco
Seaside Sparrow
Barn Swallow
Arctic Three-toed Woodpecker
Three-toed Woodpecker
Ant-eating Woodpecker
Nuttall's Woodpecker
Red-cockaded Woodpecker
Kingbird
Bobolink (male, summer)
Black Phœbe
Cliff Swallow
Lark Bunting
White-throated Swift

BLACK AND RED

Smaller than Robin

Red-winged Blackbird
Bicolored Red-wing
Scarlet Tanager
Western Tanager
Painted Redstart

BLACK, RED, AND WHITE

Size of Robin

Rose-breasted Grosbeak
Red-headed Woodpecker
Red-bellied Woodpecker
Golden-fronted Woodpecker
Gila Woodpecker
Tricolored Red-wing
Red-breasted Sapsucker

BLACK AND ORANGE

Smaller than Robin

Baltimore Oriole

BLACK AND YELLOW

Size of Robin

Audubon's Oriole
Bullock's Oriole
Scott's Oriole
Scott's Oriole
Yellow-bellied Sapsucker
Yellow-headed Blackbird
Evening Grosbeak
Meadowlark (brown above)
Western Meadowlark (gray above

Smaller than Robin

Goldfinch
Arkansas Goldfinch

BLACK AND BROWN

Smaller than Robin

Orchard Oriole

WHITE

Size of Crow or Larger

White Gyrfalcon
Snowy Owl
White-tailed Kite (upper parts pale-gray, shoulders black)

Size between Crow and Robin

Willow Ptarmigan (winter)
Rock Ptarmigan (winter)
White-tailed Ptarmigan (winter)

Smaller than Robin

Snow Bunting (some brownish)

BROWNISH

Size of Crow or Larger

Golden Eagle
Turkey Vulture
Great Horned Owl
Ruffed Grouse
Spotted Owl
Marsh Hawk (young, rump white)

Size between Crow and Robin

Chuck-will's-widow
Sparrow Hawk
Boat-tailed Grackle (female)
Whip-poor-will
Mourning Dove
California Thrasher

Smaller than Robin

Cañon Towhee
Abert's Towhee
European Goldfinch (face red, wing-patch yellow)
Olive-sided Flycatcher (streaked above and below)
Crested Flycatcher
Chimney Swift
Vaux's Swift
Cedar Waxwing
Bohemian Waxwing
Gray-crowned Rosy Finch
Carolina Wren
House Wren
Winter Wren
Brown Creeper (streaked lengthwise with lighter)
Say's Phœbe
Bank Swallow
Rough-winged Swallow

BROWNISH, MIXED OR STREAKED WITH YELLOWISH OR WHITE

(Usually lighter below)

Size of Crow or Larger

Goshawk (young)
Red-tailed Hawk
Harris's Hawk
Red-shouldered Hawk
Swainson's Hawk
Rough-legged Hawk (light phase)
Gryfalcon
Prairie Falcon
Broad-winged Hawk
Road-runner
Prairie Chicken
Heath Hen
Sage Hen
Sharp-tailed Grouse
Barred Owl
Long-eared Owl
Short-eared Owl
Barn Owl

Size between Crow and Robin

Cooper's Hawk (young)
Pigeon Hawk (young)
Sharp-shinned Hawk (young)
Hawk Owl
Saw-whet Owl
Richardson's Owl
Burrowing Owl
Screech Owl
Willow Ptarmigan (summer)
Rock Ptarmigan (summer)
White-tailed Ptarmigan (summer)
Bob-white
Masked Bob-white
Mearns's Quail
Poor-will
Brown Thrasher
Flicker (transversely barred with black on back)

Smaller than Robin

Red-winged Blackbird (female)
Bobolink (male in autumn, female, and young)
Williamson's Sapsucker (female)
Pygmy Owl
Elf Owl
Coues's Flycatcher
Purple Finch (female)
House Finch
Redpoll
Pine Siskin
Lapland Longspur
Ipswich Sparrow
Savannah Sparrow
Grasshopper Sparrow
Henslow's Sparrow
Sharp-tailed Sparrow
Lark Sparrow
Harris's Sparrow
White-crowned Sparrow
White-throated Sparrow
Golden-crowned Sparrow
Tree Sparrow
Chipping Sparrow
Field Sparrow
Pine-woods Sparrow
Song Sparrow
Lincoln's Sparrow
Vesper Sparrow
Swamp Sparrow
Fox Sparrow
Skylark
Pipit
Sage Thrasher
Cactus Wren
Rock Wren
Bewick's Wren
Short-billed Marsh Wren
Long-billed Marsh Wren
Wren-Tit
Wood Thrush
Veery
Gray-cheeked Thrush
Olive-backed Thrush
Russett-backed Thrush
Hermit Thrush
Ground Dove
Inca Dove

RED

Size of Robin or Smaller

Cardinal
Summer Tanager
Crossbill
White-winged Crossbill
Pine Grosbeak (upper parts gray)
Purple Finch (male)
Varied Bunting (forehead and rump blue)
Painted Bunting

BLUE

Size between Crow and Robin

Arizona Jay
Florida Jay
California Jay (below white)
Woodhouse's Jay (below gray)
Steller's Jay (head black)
Blue Jay

Smaller than Robin

Bluebird (breast rufous)
Mountain Bluebird (white below)
Western Bluebird (breast and back rufous)
Blue Grosbeak
Indigo Bunting (male)
Lazuli Bunting (male)

GREEN

Size between Crow and Robin

Carolina Paroquet
Thick-billed Parrot
Coppery-tailed Trogon
Green Jay

Smaller than Robin

Rivoli's Hummingbird
Ruby-throated Hummingbird
Blue-throated Hummingbird
Black-chinned Hummingbird
Anna's Hummingbird
Broad-tailed Hummingbird
Rufous Hummingbird

GREEN AND WHITE

Smaller than Robin

Texas Kingfisher
Violet-green Swallow
Tree Swallow

GRAYISH

(Usually lighter below)

Size of Crow or Larger

Mississippi Kite (ashy below)
Great Gray Owl
Marsh Hawk (rump white)
Goshawk (finely barred below)
Sennett's White-tailed Hawk (shoulders rufous)

Size Between Crow and Robin

Clarke's Nutcracker
Sharp-shinned Hawk (rufous, barred, below)
Cooper's Hawk (rufous, barred, below)
Screech Owl (gray phase)
Yellow-billed Cuckoo
Black-billed Cuckoo
Canada Jay

Size of Robin or Smaller

Robin (rufous below)
Bendire's Thrasher
Leconte's Thrasher
Crissal Thrasher
Mockingbird
Northern Shrike
Loggerhead Shrike
Townsend's Solitaire
Scissor-tailed Flycatcher
Gray Kingbird
Phrebe
Wood Pewee
Western Wood Pewee
Least Flycatcher
Yellow-bellied Flycatcher
Horned Lark
Black-chinned Sparrow
Black-throated Sparrow
Arizona Pyrrhuloxia (crimson in center below)
Bell's Sparrow
Dickcissel
Warbling Vireo
Philadelphia Vireo
Black-capped Vireo
Bell's Vireo
Tufted Titmouse
Bridled Titmouse
Black-crested Titmouse
Chickadee
Mountain Chickadee
Hudsonian Chickadee
Acadian Chickadee
Chestnut-backed Chickadee
Bush-Tit
Verdin

BLUISH-GRAY

(lighter below)

Size between Crow and Robin

Band-tailed Pigeon
Passenger Pigeon (rufous below)
White-winged Dove
Mountain Quail
California Quail
Scaled Quail
Gambel's Quail
Belted Kingfisher
Piñon Jay
Varied Thrush (below rusty, black chest-band)

Smaller Than Robin

Red-breasted Nuthatch (rufous below)
Brown-headed Nuthatch
Pygmy Nuthatch
White-breasted Nuthatch
Blue-gray Gnatcatcher

GREENISH-GRAY

(usually white or yellowish below)

Size of Robin or Smaller

Arkansas Kingbird
Green-tailed Towhee (crown rufous)
Texas Sparrow (crown brown, white center stripe)
Yellow-throated Vireo
Red-eyed Vireo
Blue-headed Vireo
White-eyed Vireo
Ruby-crowned Kinglet
Golden-crowned Kinglet
Alder Flycatcher
Traill's Flycatcher
Acadian Flycatcher
Western Flycatcher
Yellow-bellied Flycatcher

COLOR KEY TO WARBLERS

BLACK AND WHITE STRIPED

Black and White Warbler
Myrtle Warbler
Black-poll Warbler
Audubon's Warbler

BLACK AND RED

Redstart

BLACK AND YELLOW

Townsend's Warbler
Golden-cheeked Warbler
Blackburnian Warbler
Hermit Warbler
Magnolia Warbler

BLACK AND GRAY

Golden-winged Warbler
Black-throated Gray Warbler

BLACK, GRAY, AND YELLOW

Yellow-throated Warbler
Grace's Warbler

YELLOW

Prothonotary Warbler
Cape May Warbler
Wilson's Warbler
Blue-winged Warbler
Yellow Warbler

OLIVE ABOVE; YELLOW BELOW

Yellow-breasted Chat
Maryland Yellow-throat
Mourning Warbler
Ovenbird
Black-throated Green Warbler
Olive Warbler
Hooded Warbler
Belding's Yellow-throat
Macgillivray's Warbler
Kentucky Warbler
Yellow Palm Warbler
Kirtland's Warbler
Prairie Warbler
Lawrence's Warbler
Black-throated Blue Warbler (female)

OLIVE ABOVE; WHITE BELOW

Chestnut-sided Warbler

DUSKY OLIVE ABOVE; WHITISH OR YELLOWISH BELOW

Swainson's Warbler
Tennessee Warbler
Pine Warbler
Louisiana Water-Thrush
Bay-breasted Warbler
Worm-eating Warbler
Nashville Warbler
Water-Thrush
Connecticut Warbler

GRAY ABOVE; WHITE BELOW

Brewster's Warbler
Virginia's Warbler
Lucy's Warbler
Parula Warbler

GRAY ABOVE; YELLOW BELOW

Canada Warbler

BLUE ABOVE; WHITE BELOW

Cerulean Warbler

BLUE AND BLACK; WHITE BELOW

Black-throated Blue Warbler (male)

GLOSSARY

(For the scientific names of the orders, suborders, and families of birds, consult the Index.)

Abdominal. Relating to the abdomen or belly.

Abnormal. Irregular; not conforming to the type.

Acuminate. Terminating in a long tapering point.

Acute. Sharp-pointed.

Adult. Of breeding age, usually with fully mature plumage.

Aërial. Inhabiting the air; performed in the air.

Air-sac. Any one of the spaces, in different parts of the bodies of birds, which are filled with air and connected with the air passages of the lungs.

Albinism. An abnormal condition of plumage, in which white replaces the ordinary colors.

Albino. Affected with albinism.

Algæ. Seaweed.

Alpine. Pertaining to high altitudes, chiefly near timber line.

Altricial. Young are helpless.

Amphipod. Of or belonging to the Amphipoda, a suborder of crustaceans including the sand fleas and allied forms.

Anal region. The feathered region immediately surrounding the anus or vent.

Annulated. Surrounded by rings of color.

Anterior. Forward; in front of.

Anus. The vent.

Apex. Tip or point.

Apical. Relating to the tip or point.

Aquatic. Pertaining to or living in the water.

Arboreal. Pertaining to or living in trees.

Attenuate, attenuated. Growing gradually narrower toward the tip, but not sharply pointed.

Auriculars. Ear-coverts; ear region.

Avi-fauna. The bird-life of a given region.

Axillaries, axillars. The elongated feathers growing from the axilla or armpit.

Bar. A transverse mark.

Basal. Relating to or situated at the base. The basal part of a feather is that part where it enters the skin; the basal part of the bill is that part nearest the head, and not the lower mandible.

Belt. A broad band of color across the breast or belly.

Bevy. A flock, as of Quails.

Bicolor. Of two colors.

Boreal. Northern; used by scientists to designate a division of the earth comprised of its northern and mountainous parts.

Bristle. A small hairlike feather near the angle of the mouth, or rictus.

Bronchi. One of the subdivisions of the windpipe.

Calcareous. Chalky; limy.

Cambium. In certain shrubs and trees the ring of tissue which separates the wood from the bark.

Carnivorous. Flesh-eating; feeding or preying on other animals.

Carpal. Pertaining to the carpus or wrist.

Carpal joint. The bend of the wing.

Caudal. Relating to the tail.

Cere. A soft swollen area at the base of the upper part of the bill.

Cervical. Pertaining to the cervix or hind neck.

Cinereous. Ash-colored; of a clear bluish-gray.

Clavicle. The collar bone.

Clutch. A complement of eggs; a brood of chicks.

Coalesce. To unite; to grow together.

Collar. A ring of colored feathers encircling the neck.

Commissure. The line formed by the closed mandibles of a bird's bill.

Complement. The full number, as of the eggs of a bird; clutch.

Compressed. Flattened from side to side; the opposite of depressed.

Concentric. Having a common center, as rings or circles one within another.

Concolor. Of the same color as (some other object); of uniform color.

Confluent. Running into or blending in a complete whole; — said of colors in plumage.

Coniferous. Bearing cones, as the cypress and pine.

Conoid, conoidal. Resembling or approaching a cone in shape.

Contour feathers. The common feathers that form the general covering of a bird, determining its shape.

Corrugate, corrugated. Furrowed; wrinkled.

Cosmopolitan. Not restricted to any locality; found in all countries; world-wide.

Covert. Any one of the special feathers covering the bases of the quills of the wings and tail of a bird. They are called upper tail-coverts, lower tail-coverts, greater coverts, lesser wing-coverts, etc., according to location.

Covey. An old bird with her brood; a small flock; — used chiefly of Grouse and Partridges.

Crepuscular. Active at twilight.

Crescentic. Crescent-shaped.

Crest. A tuft of feathers on the top of the head.

Crested. Furnished with a crest.

Crown. The top part of the head.

Crustacea. A large class of water-breathing animals, including the water fleas, barnacles, shrimps, etc.

Crustacean. One of the Crustacea.

Cuneate. Wedge-shaped.

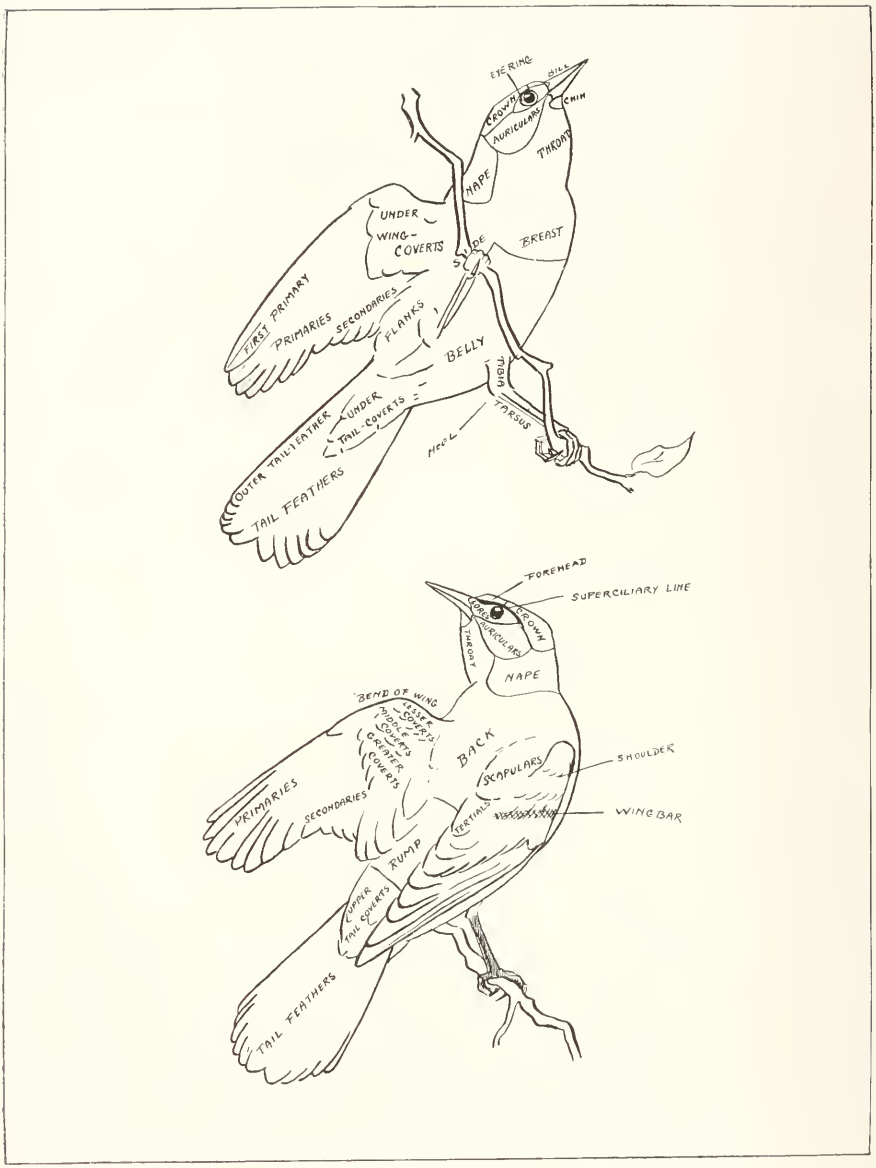
Curculio. Any snout beetle.

Cygnet. A young Swan.

Cylindrical. Shaped somewhat like a cylinder, as the bills of the Mergansers.

Deciduous. Shed at certain periods or seasons.

Decurved. Bent downward, as the bill in certain birds. Compare recurved.



Drawing by Henry Thurston

THE TOPOGRAPHY OF A BIRD

Baltimore Oriole

Deflated. Emptied of air; — the opposite of inflated.

Depressed. Broader than high; the opposite of compressed.

Dichromatic. Having two phases of color, independently of age, sex, or season.

Distal. Toward or at the extremity; the opposite of proximal.

Distribution. Natural geographical range of a species or group.

Diurnal. Active in the daytime.

Dorsal. Situated on or near the back; pertaining to the back.

Down. A covering of fluffy, soft feathers; young birds are covered with down before they acquire ordinary feathers. Down feathers have very short stems, with soft barbs.

Ear-coverts. The feathers overlying the ears of most birds; auriculars.

Eared. Having tufts of feathers resembling ears.

Ear-tufts. Tufts of elongated feathers on each side of the crown or forehead, that can be erected.

Eclipse plumage. A term applied to the incomplete molt of the males of certain birds.

Economic value. The usefulness, or otherwise, of a bird judged by its food, its relation to agriculture, etc.

Elongate. Used in the sense of lengthened or extended; elongated.

Emarginate. Having the margin cut away; notched.

Environment. The external conditions and influences affecting the life and development of an animal.

Epignathous. Upper mandible longer than, and decurved over, lower.

Erectile. Capable of being erected or dilated.

Exotic. Foreign; not native; introduced from a foreign country.

Facial disks. The area about the eyes of owls.

Falciform. Sickle-shaped; scythe-shaped.

Family. A group of genera agreeing in certain characters, and differing in one or more characters from other families of the order to which they belong.

Fauna. The animal life of a region.

Felt. Matted fibers of hair, wool, fur, etc.; to cause to mat or to adhere together.

Ferruginous. Like iron rust in color; yellowish-red; brownish-red.

Filament. A barb of a down feather.

Filamentous. Threadlike.

Filiform. Threadlike.

Flag. Any one of the secondaries of a bird's wing; also, the long feathers on the lower part of the legs of certain birds, as the Owls and the Hawks.

Flush. To cause a bird to start up and fly.

Fore-neck. The throat; sometimes includes chin, throat, and chest.

Frontal. Pertaining to the forehead.

Frugivorous. Feeding on fruit.

Fulvous. Tawny; dull yellowish with a mixture of brown and gray.

Fuscous. Dark brown; smoky brown.

Gallinaceous. Like the pheasants and the domestic fowls; hen-like.

Gape. The opening of the mouth.

Genus [plural, **genera**]. A group of species agreeing in certain characters, and differing from other genera of the family to which they belong; also a single species showing unusual differences.

Glaucous. Of a whitish-blue or whitish-green color.

Gonys. The outline of the lower mandible, from the tip to the point where the branches fork.

Gorget. A patch on the throat, distinguable from the surrounding parts because of its color or for some other special cause.

Granular, Granulated. Having numerous small elevations on the surface; lumpy.

Greater coverts. The hindmost series of wing-coverts, which immediately overlap the basis of the secondaries.

Gregarious. Living in flocks.

Ground color. The main color of the general surface.

Gular. Pertaining to the throat.

Habitat. Natural abode; the kind of environment in which the bird occurs.

Hibernate. To pass the winter in a lethargic or torpid state.

Hybrid. Offspring of parents of different species.

Hymenopterous. Relating to the Hymenoptera, an order of insects which includes the ants, bees, wasps, sawflies, etc.

Immaculate. Unspotted; unmarked.

Immature. Not adult, although full-grown.

Incubation. The act of sitting on eggs; brooding.

Indigenous. Growing or living naturally in a country or region; native; not imported.

Inflated. Filled with air; the opposite of deflated.

Insectivorous. Feeding on insects; of or pertaining to insects.

Interscapulars. The feathers in the middle line of the back, between the scapulars or shoulders.

Iridescent. With changeable colors or tints in different lights.

Iris. The colored circle of the eye surrounding the pupil.

Isochronal. Recurring at regular intervals; uniform in time.

Isotherm. In physical geography a line marking points on the earth's surface having the same temperature.

Jugular. On, or relating to the jugulum, as a jugular collar.

Jugulum. The lower throat or foreneck; immediately above the breast; sometimes called the upper breast.

Juvenal plumage. The plumage immediately succeeding the natal down.

Lamella [plural, **lamellæ**]. A thin plate or scale.

Lamellate. Having lamellæ, as the sides of a Duck's bill.

Lamellirostral. Having a lamellate bill, as the Ducks, Geese, and Swans.

Larva [plural, **larvæ**]. A grub, caterpillar, maggot, etc.

Lateral. At or toward the side.

Lesser wing-coverts. The smaller wing-coverts, those covering most of the shoulder, or area in front of the middle coverts.

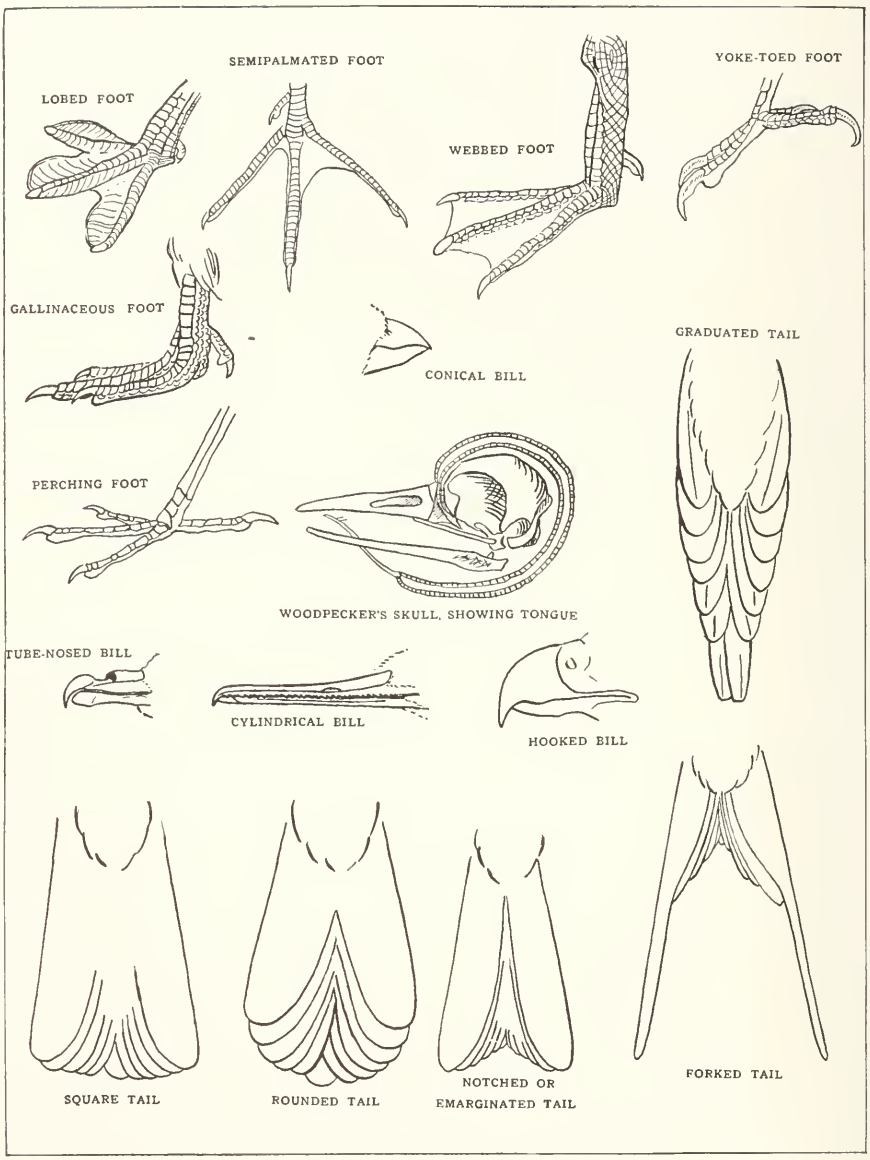
Linear. Line-like.

Littoral. Pertaining to or inhabiting the shore; coastal region.

Lobate, lobated. Having lobes or flaps along the sides of the toes.

Loral. Relating to the lores.

Lore. The space between the eye and the bill;— generally used in the plural, lores.



Drawing by Henry Thurston

Lower tail-coverts. The feathers overlapping the base of the tail-feathers beneath.

Maculate. Spotted; blotched.

Malar region. The side of the lower jaw behind the horny covering of the mandible; cheek region.

Mammal. An animal the female of which suckles her young.

Mandible. Either of the jaws of a bird's bill.

Mantle. A term used to include the back, the scapulars, and the upper surface of the wings.

Marine. Pertaining to, existing in, or formed by the sea.

Maritime. Living or found near the sea; bordering on the sea.

Mat. The lining of down in the nest of a Duck.

Maturity. State of being mature; having attained its complete adult plumage.

Maxilla [plural, **maxillæ**]. The upper jaw;—used loosely for either jaw.

Median, Medial. Along the middle line.

Melanism. An unusual development of black or nearly black color in the plumage.

Melanistic. Affected with or showing melanism.

Middle wing-coverts. The coverts between the greater and the lesser coverts.

Migrant. Any bird found in certain districts during migration only.

Migratory. Moving, either occasionally or regularly, from one climate or region to another.

Milliped, millipede, milleped, millepede. Any one of the insects commonly known as thousand legs.

Mollusks. Shellfish such as clams, oysters, whelks, etc.

Molt. The periodical shedding or casting of the feathers.

Monogamous. Mating with only one of the opposite sex. Compare polygamous.

Mustache. A conspicuous stripe of color beneath the eye; maxillary line.

Nail. The horny plate or tip on the beak of Ducks and certain other birds.

Nape. The part of the hindneck back of the occiput; the nucha.

Nidicolous. Reared for a time in the nest.

Nidification. Nest building.

Nocturnal. Moving about at night; done or occurring in the night.

Nucha. Nape.

Nuchal. Relating to the nucha or nape.

Nuptial plumes. Ornamental feathers acquired at the approach of the breeding season, and molted at its close.

Obscure. Indistinct; ill-defined.

Obsolete. Indistinct.

Occipital. Relating to the occiput.

Occiput. The back part of the head.

Ocellated. Like, an eye or ocellus; having ocelli, as parts of the plumage in certain birds.

Ocellus [plural, **ocelli**]. An eye-like spot of color.

Ochraceous. Of the color of ocher; resembling ocher.

Olivaceous. Olive-colored; of an olive-green color; resembling the olive.

Omnivorous. Eating both vegetable and animal food.

Oölogical. Pertaining to oölogy, or the study of eggs.

Opaque. Without gloss; dull; not transparent.

Order. A group of families agreeing in certain characters.

Ornithological. Pertaining to ornithology.

Ornithologist. A student of ornithology.

Ornithology. The branch of zoology which treats of birds; a treatise on the study of birds.

Pectoral. Relating to the breast.

Pelagic. Oceanic; living on or at the surface of the sea far from the coast.

Pellet. A small ball, ejected from the mouth by certain birds, and containing the non-digestible portions of their prey.

Pendulous. Hanging downward; suspended loosely; swinging.

Pensile. Suspended; hanging, as the nests of certain birds.

Perforate. Pierced through.

Piscivorous. Feeding on fish.

Plicate. Folded like a fan.

Plumage. The entire covering of feathers. See, also, eclipse plumage, juvenal plumage.

Plumbeous. Of a deep bluish-gray color; lead-colored.

Plumelets. Small plumes.

Plumicorns. Ear-tufts; popularly called horns or ears.

Polygamous. Having more than one mate at one time. Compare monogamous.

Polygamy. The habit of having more than one mate at the same time.

Post-nuptial. Occurring after the breeding season.

Postorbital. Back of or behind the eye.

Precocial, præcocial. Covered with down and able to run about when newly hatched.

Predacious. Preying on other animals.

Primary. Any one of the quill feathers of the pinion.

Primary coverts. The stiff coverts which overlie the bases of the primaries.

Produced. Extended.

Proximal. That end of a feather or limb which is nearest to the point of attachment;—the opposite of distal.

Psilopædic. Young are naked when hatched, and are fed by parents.

Ptilopædic. Young are feathered.

Pupa [plural, **pupæ**]. In insects the stage between the larva and the adult stage.

Pupil. The central spot or disk of the eye, enclosed within the iris.

Quill feathers. The primaries.

Rectrix [plural, **rectrices**]. A tail-feather.

Recurved. Bent upward;—used of a bird's bill. Compare decurved.

Regurgitation. The casting out (of food) from the stomach and mouth.

Remex [plural **remiges**]. Any one of the longer flight feathers.

Resident. Any bird that stays in a certain district permanently.

Reticulate. Netted; resembling network.

Rictal. Pertaining to the rictus.

Rictus. The edges and corner of the mouth; the gape.

Rufescent. Tinged with red; reddish.

Rufous. Brownish-red; rust-colored.

Scapular region. The longitudinal area of feathers overlying the shoulder blade.

Scapulars. The feathers of the scapular region; shoulders.

Scutellum [plural, **scutella**]. Ascute or plate or shield.

Seasonal. Pertaining to or occurring with the change of the seasons.

Secondary. Any of the flight feathers of the fore-arm.

Secondary coverts. The greater wing-coverts.

Secretive. Inclined to keep out of sight; retiring to a degree.

Semi-. A prefix meaning half, partly, or imperfectly.

Semi-lunar. Like a half-moon in shape.

Semipalmate, semipalmated. Having the front toes webbed only half, or part, way to their ends.

Semi-pensile. Partly hanging or suspended.

Serrate, serrated. Saw-toothed; notched like a saw on the edge.

Setaceous. Bristled; bristly.

Shaft. The horny axis or stem of a feather.

Sibilant. Hissing; making a hissing sound.

Sinuate, sinuated. With the edge cut away less abruptly than when emarginate.

Skin. In zoölogy, the skin of a bird or animal with its covering of feathers or fur and other external parts, as the bill and feet.

Soporific. Tending to cause sleep.

Species. A group of animals possessing in common certain characters which distinguish them from other similar groups; a distinct sort or kind of animal.

Speculum. A mirrorlike or brightly colored area on the wing of certain Ducks.

Stock species. Same as type species.

Sub-basal. Almost or nearly at the base.

Sub-caudal. Under the tail.

Sub-marginal. Nearly at the margin or edge.

Sub-orbital. Below the eye.

Subspecies. A variety or race; a form connected with other forms of a species by individuals possessing intermediate characters.

Subterminal. Almost at the end.

Subtropical. Of or pertaining to the regions bordering on the tropics; nearly tropical.

Subtruncate. Terminating abruptly.

Superciliary. Above the eye.

Superior. Upper; topmost; uppermost.

Supraloral. Above the lores.

Supra-orbital. Above the eye.

Tail-coverts. The feathers which cover the base of the tail, above and below.

Tarsus [plural, **tarsi**]. The shank of a bird's leg.

Taxidermist. One who prepares, stuffs, and mounts in lifelike form the skins of animals.

Terminal. At the end or tip.

Terminology. The special terms used in any science.

Terrestrial. Inhabiting or belonging to the ground or land in distinction from water, trees, etc.

Tertiaries. The inner secondaries.

Tibia. The part of the leg next above the shank; the "drumstick."

Transverse. Crosswise.

Traversed. Crossed.

Truncate, truncated. Cut squarely off.

Tuberculated. Having tubercles, that is, small knob-like prominences on some part of an animal.

Tumid. Enlarged; distended; swollen.

Type. Typical form. A type species is that form used as the basis for the original description of a species. A type genus is that genus from which the name of the family or subfamily to which it belongs is formed.

Under tail-coverts. The feathers covering the base of the tail below.

Under wing-coverts. The coverts of the under surface of the wing.

Uniform. Entirely of the same color or shade, as "uniform sooty-black."

Upper tail-coverts. The feathers overlying the base of the tail above.

Vent. The anus.

Vermiculate, vermiculated. Marked with fine wavy lines like worm-tracks.

Vernacular. Term used in the sense of common, as opposed to scientific.

Vernal. Pertaining to spring.

Vertex. The crown; the central part of the top of the head.

Vinaceous. Wine-colored.

Visitor. Any bird found, regularly or irregularly, in a certain district at certain seasons only, as spring, summer, autumn, or winter; not a permanent resident.

Volunteer. Self-sown.

Web. The series of barbs on each side of a feather.

Zone. A broad band of color completely encircling the body of a bird.

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